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2006
AMENDMENTS
to the
Program of Studies: Senior High Schools

1. **Replace** (2005) front-end pages i to vi and Preamble pages 1 to 5 with **revised** (2006) front-end pages i to vi and Preamble pages 1 to 5.

2. INTEGRATED OCCUPATIONAL PROGRAM

   - **Replace** the Integrated Occupational Program title page, following the Integrated Occupational Program divider.
   - **Remove** and **discard** IOP English 16–26–36, pages 1 to 26 (1992).

   Note: Knowledge and Employability occupational courses Fabrics and Natural Resources are being field tested for the 2006–2007 school year. Mandatory implementation of Fabrics and Natural Resources will occur in September 2007 and the corresponding IOP occupational courses will be withdrawn (Agricultural Production, Fashion and Fabric Services, and Natural Resource Services).

3. KNOWLEDGE AND EMPLOYABILITY

   - **Insert new** Knowledge and Employability (KE) divider, following IOP Social Studies 16–26, page 26.
   - **Insert new** Knowledge and Employability title page, following Knowledge and Employability divider.
   - **Insert new** KE English Language Arts 10-4, 20-4, 30-4, pages 1 to 36, following the Knowledge and Employability title page.
   - **Insert new** KE Mathematics 10-4, 20-4, pages 1 to 17, following KE English Language Arts 10-4, 20-4, 30-4, page 36.
   - **Insert new** KE Science 10-4, 20-4, pages 1 to 37, following KE Mathematics 10-4, 20-4, page 17.
   - **Insert new** KE Occupational Courses 10-4, 20-4, 30-4, pages 1 to 12, following KE Science 10-4, 20-4, page 37.
   - **Insert new** KE Art/Design and Communication, pages 13 to 92, following KE Occupational Courses 10-4, 20-4, 30-4, page 12.
   - **Insert new** KE Auto Mechanics, pages 13 to 78, following KE Art/Design and Communication, page 92.
   - **Insert new** KE Business Services, pages 13 to 102, following KE Auto Mechanics, page 78.
   - **Insert new** KE Construction: Building, pages 13 to 79, following KE Business Services, page 102.
   - **Insert new** KE Construction: Metal Fabrication, pages 13 to 78, following KE Construction: Building, page 79.
   - **Insert new** KE Cosmetology, pages 13 to 79, following KE Construction: Metal Fabrication, page 78.
   - **Insert new** KE Foods, pages 13 to 79, following KE Cosmetology, page 79.
   - **Insert new** KE Horticulture, pages 13 to 76, following KE Foods, page 79.
   - **Insert new** KE Human Care, pages 13 to 77, following KE Horticulture, page 76.
   - **Insert new** KE Workplace Readiness, pages 13 to 37, following KE Human Care, page 77.

(continued)

4. LANGUAGE ARTS

- **Replace** the Language Arts title page, following the Language Arts divider.
- **Insert new** Chinese Language Arts 10–20–30, pages 1 to 50, following the Language Arts title page.
- **Replace** Français 10–20–30, page 1, with **revised** Français 10–20–30, page 1.
- **Replace** French Language Arts 10–20–30, page 1, with **revised** French Language Arts 10–20–30, page 1.

5. SCIENCE

- **Replace** the Science title page, following the Science divider.
- **Replace** Science 20–30, page 1, with **revised** Science 20–30, page 1.
- **Insert new** Science 20, pages 1 to 53, following Science 20–30, page 1.

PROGRAM of STUDIES

Senior High Schools

This Program of Studies is issued under the authority of the Minister of Education pursuant to section 39(1) of the *School Act*, Revised Statutes of Alberta 2000, Chapter S–3 with amendments in force as of January 1, 2002.

Alberta
EDUCATION

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This document reflects changes in the program of studies for senior high schools up to August 2006.

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PROGRAM OF STUDIES: SENIOR HIGH SCHOOLS

2006 CONTENTS

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Course **All programs of study are available for viewing and downloading at <http://www.education.gov.ab.ca> under Kindergarten to Grade 12, Curriculum and Learning and Teaching Resources, Programs of Study and Learning and Teaching Resources.**	A. Program Rationale and Philosophy	B. General Learner Expectations	C. Curriculum Standards/ Specific Learner Expectations
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Course **All programs of study are available for viewing and downloading at <http://www.education.gov.ab.ca> under Kindergarten to Grade 12, Curriculum and Learning and Teaching Resources, Programs of Study and Learning and Teaching Resources.**	A. Program Rationale and Philosophy	B. General Learner Expectations	C. Curriculum Standards/ Specific Learner Expectations
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Science 10-4, 20-4	2006	2006	2006

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Course **All programs of study are available for viewing and downloading at <http://www.education.gov.ab.ca> under Kindergarten to Grade 12, Curriculum and Learning and Teaching Resources, Programs of Study and Learning and Teaching Resources.**	A. Program Rationale and Philosophy	B. General Learner Expectations	C. Curriculum Standards/ Specific Learner Expectations
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Construction: Metal Fabrication	2006	2006	2006
Cosmetology	2006	2006	2006
Foods	2006	2006	2006
Horticulture	2006	2006	2006
Human Care	2006	2006	2006
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❶ Program information only.

Course **All programs of study are available for viewing and downloading at <http://www.education.gov.ab.ca> under Kindergarten to Grade 12, Curriculum and Learning and Teaching Resources, Programs of Study and Learning and Teaching Resources.**	A. Program Rationale and Philosophy	B. General Learner Expectations	C. Curriculum Standards/ Specific Learner Expectations
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Latin	1986	1986	2003
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Anthropology			
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Economics		1985	
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Geography		1985	1985
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History			
Western Canadian History 20		1985	1985
Canadian History 20		1985	1985
Western World History 30		1985	1985
Philosophy			
Origins of Western Philosophy 20		1985	1985
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Philosophies of Man 30		1985	1985
Political Science			
Political Thinking 20		1985	1985
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International Politics 30		1985	1985
Psychology		1985	
Personal Psychology 20			1985
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Experimental Psychology 30			1985
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Religious Ethics 20			1985
Religious Meanings 20			1985
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Sociological Institutions 20			1985
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INTRODUCTION

Program of Studies

The *Program of Studies* identifies the outcomes for the core and optional learning components for Kindergarten to Grade 12. Content is focused on what students are expected to know and be able to do.

Though organized into separate subject, course or program areas, there are many connections across the curriculum. Students see the world as a connected whole rather than as isolated segments. Integrating across content areas, and providing ways for students to make connections, enhances student learning. The reporting of student progress should, nevertheless, be in terms of the outcomes outlined in courses of study for each subject area.

Within any group of students there is a range of individual differences. Flexibility in planning for individuals within a group is needed. Therefore, school organization and teacher methodology are not mandated at the provincial level and may vary from class to class and school to school in order to meet student needs.

For guidelines and regulations relating to school programs and organization for instruction, refer to the *Guide to Education: ECS to Grade 12*, available for viewing and downloading from the Alberta Education Web site. Print copies are available for purchase from the LRC.

Basic Learning Resources

Alberta Education authorizes a variety of resources to support the programs of study. Complete listings of all resources can be found in the *Learning Resources Centre Resources Catalogue*, or electronically through the:

- LRC Web site at www.lrc.education.gov.ab.ca.

Resource listings can also be accessed through the:

- Authorized Resources Database at www.education.gov.ab.ca under Kindergarten to Grade 12, Curriculum and Learning and Teaching Resources, Programs of Study and Learning and Teaching Resources.

Alberta Education Web Site

Information covering all areas of Kindergarten to Grade 12 education in Alberta, including curriculum and resources, can be found at www.education.gov.ab.ca under Kindergarten to Grade 12.

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PROGRAM FOUNDATIONS

Alberta's Education System[1]

Vision

The best Kindergarten to Grade 12 education system in the world.

Mission

The Ministry of Education, through its leadership and work with stakeholders, ensures that students attain the knowledge and skills required for lifelong learning, work and citizenship.

Core Business: Lead and Support the Kindergarten to Grade 12 Education System So That All Students Are Successful at Learning

Goal 1 – High quality learning opportunities for all

Goal 2 – Excellence in student learning outcomes

Goal 3 – Highly responsive and responsible education system

Principles

Student Centred

- The highest priority of the education system is the success of the student.

Accessible

- Every student in Alberta has the right of access to a quality basic education consistent with the student's needs and abilities.

Collaborative

- Kindergarten to Grade 12 education, which provides the foundation for lifelong learning, best occurs when partners and stakeholders work together to provide a holistic approach and a supportive environment.

Accountable

- All those involved in the education system are accountable to Albertans for quality results, system sustainability and fiscal responsibility.

Responsive

- The education system is flexible, anticipates student needs and provides opportunities for parent and student choice.

Innovative

- The education system demonstrates leading-edge innovation for improved results.

Equitable

- All students have equitable access to quality learning opportunities.

Values

- Respect
- Integrity
- Trust
- Openness
- Caring

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[1] Excerpted from the *Education Business Plan 2006 2009*, March 2006. This plan is available on the Alberta Education Web site at www.education.gov.ab.ca.

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Goals and Standards Applicable to the Provision of Basic Education in Alberta[1]

A basic education must provide students with a solid core program, including language arts, mathematics, science and social studies.

Students will be able to meet the provincial graduation requirements and be prepared for entry into the workplace or post-secondary studies. Students will understand personal and community values and the rights and responsibilities of citizenship. Students will develop the capacity to pursue learning throughout their lives. Students also should have opportunities to learn languages other than English and to attain levels of proficiency and cultural awareness which will help to prepare them for participation in the global economy.

Student Learning Outcomes

Students are expected to develop the knowledge, skills and attitudes that will prepare them for life after high school. A basic education will allow students to:

- read for information, understanding and enjoyment
- write and speak clearly, accurately and appropriately for the context
- use mathematics to solve problems in business, science and daily-life situations
- understand the physical world, ecology and the diversity of life
- understand the scientific method, the nature of science and technology, and their application to daily life
- know the history and geography of Canada and have a general understanding of world history and geography
- understand Canada's political, social and economic systems within a global context
- respect the cultural diversity and common values of Canada
- demonstrate desirable personal characteristics, such as respect, responsibility, fairness, honesty, caring, loyalty and commitment to democratic ideals
- recognize the importance of personal well-being, and appreciate how family and others contribute to that well-being
- know the basic requirements of an active, healthful lifestyle
- understand and appreciate literature, the arts and the creative process
- research an issue thoroughly, and evaluate the credibility and reliability of information sources
- demonstrate critical and creative thinking skills in problem solving and decision making
- demonstrate competence in using information technologies
- know how to work independently and as part of a team
- manage time and other resources needed to complete a task
- demonstrate initiative, leadership, flexibility and persistence
- evaluate their own endeavours and continually strive to improve
- have the desire and realize the need for lifelong learning.

Standards for Student Learning

The Minister of Education defines acceptable standards and standards of excellence for student achievement in consultation with Albertans. Employers are involved in specifying the knowledge, skills and attitudes needed in the workplace. Schools, school authorities and the Minister of Education assess and report regularly to the public on a range of student learning.

The school's primary responsibility is to ensure that students meet or exceed the provincial standards, as reflected in the Student Learning Outcomes (outlined above), the Alberta Programs of Study, provincial achievement tests, diploma examinations and graduation requirements.

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[1] Excerpted from the *K–12 Learning System Policy, Regulations and Forms Manual*. This manual is available on the Alberta Education Web site at www.education.gov.ab.ca.

Education Delivery

Schools must engage students in a variety of activities that enable them to acquire the expected learnings. Schools have authority to deploy resources and may use any instructional technique acceptable to the community as long as the standards are achieved. Schools, teachers and students are encouraged to take advantage of various delivery options, including the use of technology, distance learning and the workplace.

Schools play a supportive role to families and the community in helping students develop desirable personal characteristics and the ability to make ethical decisions. Schools also help students take increasing responsibility for their learning and behaviour, develop a sense of community belonging and acquire a clearer understanding of community values and how these relate to personal values.

Students learn basic, transferable knowledge, skills and attitudes in school. Schools, in co-operation with employers, provide opportunities for students to develop and practise employability skills. The Minister of Education provides credit for off-campus learning that is approved and accepted by the school and the employer. Government works with schools, employers and post-secondary institutions to help young people make a smooth transition to work and further study.

RELIGIOUS AND PATRIOTIC INSTRUCTION

The following section of the *School Act* focuses on religious and patriotic instruction. It is cited here for the information of administrators and teachers.

SECTION 50(1) A board may

(a) prescribe religious instruction to be offered to its students;

(b) prescribe religious exercises for its students;

(c) prescribe patriotic instruction to be offered to its students;

(d) prescribe patriotic exercises for its students;

(e) permit persons other than teachers to provide religious instruction to its students.

(2) Where a teacher or other person providing religious or patriotic instruction receives a written request signed by a parent of a student that the student be excluded from religious or patriotic instruction or exercises, or both, the teacher or other person shall permit the student

(a) to leave the classroom or place where the instruction or exercises are taking place for the duration of the instruction or exercises, or

(b) to remain in the classroom or place without taking part in the instruction or exercises.

1988 cS–3.1 s33;1990 c36 s16

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LEARNING RESOURCES

Policy

Alberta Education selects, acquires, develops, produces, translates and authorizes the best possible instructional materials for the implementation of approved programs of study.

Learning Resource Categories

In terms of provincial policy, learning resources are those print, nonprint and electronic software materials used by students or teachers to facilitate learning and teaching. Many learning resources, both publisher-developed and teacher-made, are available for use in implementing elementary, junior high and senior high programs. Decisions about the selection and use of resources are a local matter and should take into account student skill levels, interests, motivations and stages of development.

Alberta Education authorizes learning resources in three categories:

- basic student learning resources
- support student learning resources
- authorized teaching resources.

Authorization indicates that the resources meet high standards and can contribute to the attainment of the goals of the program. However, the authorization of resources does not require their use in program delivery. Under section 60(2) of the *School Act*, school boards may approve materials for their schools, including resources that are withdrawn from the provincial list. Many school boards have delegated this power to approve resources to school staff or other board employees under section 61(1) of the *School Act*.

Basic Student Learning Resources

Basic learning resources are those student learning resources authorized by Alberta Education as the most appropriate for addressing the majority of outcomes of the course(s), substantial components of the course(s), or the most appropriate for meeting general outcomes across two or more grade levels, subject areas or programs as outlined in provincial programs of study. These may include any resource format, such as print, nonprint, computer software, manipulatives or video.

In exceptional circumstances, a teacher resource may be given basic status.

Support Student Learning Resources

Support learning resources are those student learning resources authorized by Alberta Education to assist in addressing some of the outcomes of course(s) or components of course(s); or to assist in meeting the outcomes across two or more grade levels, subject areas or programs as outlined in the provincial programs of study. These may include any resource format, such as print, nonprint, computer software, manipulatives or video.

Authorized Teaching Resources

Authorized teaching resources are those teaching resources produced externally to Alberta Education (for example, by publishers) that have been reviewed by Alberta Education, found to meet the criteria of review and to be the best available resources to support the implementation of programs of study and courses, and the attainment of the goals of basic learning; they have been authorized by the Minister. Teaching resources produced as service documents by Alberta Education are authorized by definition.

Availability

Most authorized resources are available for purchase from the Learning Resources Centre (LRC), 12360 – 142 Street, Edmonton, Alberta, Canada, T5L 4X9. Telephone 780–427–2767, Fax 780–422–9750, Internet www.lrc.education.gov.ab.ca.

Resources are listed in the *Learning Resources Centre Resources Catalogue* and at the LRC Web site. Resources are also listed in the Authorized Resources Database at the Alberta Education Web site. See page 1.

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INTEGRATED OCCUPATIONAL PROGRAM

CONTENTS

Occupational Component 16–26–36[1]

Social Studies 16–26[2]

[1] The IOP occupational courses will be phased out over the next two years. Occupational courses at the 16 level have been withdrawn as of September 2006. Occupational courses at the 26 level will be withdrawn in September 2007 and occupational courses at the 36 level will be withdrawn in September 2008.

Note: Fabrics 10-4, Fashion Textiles 20-4 and 30-4, Industrial Textiles 20-4 and 30-4 will be field-tested for the 2006–2007 school year and implemented in September 2007. The Fabrics Services 16 course will not be withdrawn until September 2007, followed by the 26 level in 2008 and the 36 level in 2009. In September 2006, Fabric Services 16 will move from a 3-credit allocation to a 5-credit allocation to facilitate the transition to the Certificate of High School Achievement.

Natural Resources 10-4, Agriculture 20-4 and 30-4, Forestry 20-4 and 30-4, Oil and Gas 20-4 and 30-4 will be field-tested for the 2006–2007 school year and implemented in September 2007. The Natural Resources 16 and Agricultural Production 16 courses will not be withdrawn until September 2007, followed by the 26 levels in 2008 and the 36 levels in 2009. In September 2006, Natural Resources 16 and Agricultural Production will move from a 3-credit allocation to a 5-credit allocation to facilitate the transition to the Certificate of High School Achievement.

[2] The Social Studies 10-4, 20-4 Interim Program of Studies is available for viewing and downloading from the Alberta Education Web site at http://www.education.gov.ab.ca/k_12/curriculum/bySubject/kc/default.asp.

Mandatory implementation for Social Studies 10-4 will be in 2007–2008 and Social Studies 20-4 in 2008–2009.

KNOWLEDGE AND EMPLOYABILITY

CONTENTS

Academic Courses

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Mathematics 10-4, 20-4
Science 10-4, 20-4

Occupational Component Courses

Occupational Courses 10-4, 20-4, 30-4
Art/Design and Communication
Auto Mechanics
Business Services
Construction
Fabrics
Foods
Horticulture
Human Care
Workplace Readiness

Note: Knowledge and Employability occupational courses Fabrics and Natural Resources are being field tested for the 2006–2007 school year. Mandatory implementation of Fabrics and Natural Resources will occur in September 2007 and the corresponding IOP occupational courses will be withdrawn (Agricultural Production, Fashion and Fabric Services, and Natural Resource Services).

KNOWLEDGE AND EMPLOYABILITY
ENGLISH LANGUAGE ARTS
10-4, 20-4, 30-4

Policy: Knowledge and Employability courses provide students who meet the criteria with opportunities to experience success and become well prepared for employment, further studies, citizenship and lifelong learning (*Knowledge and Employability Courses Policy 1.4.2*).

VISION

Through Knowledge and Employability courses, students become active and responsible citizens, achieve their educational and career goals, improve quality of life for themselves and their families and positively impact their communities.

PHILOSOPHY AND RATIONALE

The development of the Knowledge and Employability courses was based on input received from consultations with education stakeholders throughout the province. The distinctive sequence of courses was designed to meet the educational needs of students who learn best:

- when focusing on the development and application of reading, writing and mathematical literacy,[1] and on essential employability skills
- through experiential learning activities
- when meaningful connections are made between schooling and personal experiences.

Knowledge and Employability courses assist students in:

- transitioning from school to the workplace and community
- preparing for responsible citizenship
- gaining recognition, respect and value from employers and further education providers.

Knowledge and Employability courses promote student skills, abilities and work ethics, including:

- academic and occupational skills of a standard determined by the workplace to be necessary for success
- practical applications through on- and off-campus experiences and/or community partnerships
- career development skills to explore careers, develop a career-focused portfolio and assess career skills
- interpersonal skills to ensure respect, support and cooperation with others.

1. Mathematical literacy: Selecting and applying appropriate mathematical operations, problem-solving strategies, tools and technology, and communicating using mathematical vocabulary in home, workplace and community experiences.

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Aboriginal Perspectives and Experiences
For historical, constitutional and social reasons, an understanding of First Nations, Métis and Inuit (FNMI) experiences and perspectives, and recognition that First Nations, Métis and Inuit students have particular needs and requirements, is necessary to enable all students to be respectful and responsible citizens.

Knowledge and Employability courses serve to facilitate positive experiences that will help Aboriginal students better see themselves in the curriculum and assist non-Aboriginal students to develop a better understanding of Alberta's First Nations, Métis and Inuit peoples.

GOALS OF KNOWLEDGE AND EMPLOYABILITY COURSES

Knowledge and Employability courses provide students with practical and applied opportunities to develop competencies necessary to meet or exceed the following goals. Knowledge and Employability courses prepare students to:

- earn a senior high school credential
- enter the workplace upon leaving school with employability and occupational skills that meet industry standards
- make successful transitions to other courses or to further education and training
- become responsible and contributing members of society.

CROSS-CURRICULAR, COMMUNITY AND WORKPLACE CONNECTIONS

Programs of study and resources for Knowledge and Employability courses are distinctive, in part, because they promote cross-curricular, community and workplace connections.

Cross-curricular Connections
Knowledge and Employability courses promote the integration of subjects to emphasize their interrelationships and connections to other school subjects. The philosophy of Knowledge and Employability courses is that students learn best when they can clearly recognize, in their course work, connections, applications and relevance to a variety of everyday experiences. Organizing for instruction may include thematic units, subject integration within units and/or projects in other subjects.

Community and Workplace Connections
Knowledge and Employability courses provide students with practical and applied opportunities to develop basic reading, writing and mathematical literacy. Community and workplace connections ensure learning within applied contexts, connecting the school with environments beyond school, and may include tours to local businesses and industries, mentorships, job shadowing and work experience.

Knowledge and Employability courses promote the development of career portfolios that help students connect their school experience to the world beyond school. Each portfolio will include exemplars of the student's on- and off-campus experiences and can be used when the student is seeking employment or further education/training opportunities. Items appropriate for inclusion in career portfolios include résumés, samples of written work, awards and/or their representations, teacher and self-evaluation checklists, workplace assessment tools and employer letters of recommendation.

SAFETY

Safety is emphasized and relevant information is incorporated throughout Knowledge and Employability courses, including basic safety rules and guidelines and information regarding the safe use of tools, equipment and materials in school, home, community and workplace settings.

TECHNOLOGY

Because technology is best learned within an applied context, Information and Communication Technology (ICT) outcomes, and the use of computers and other technologies, are included in Knowledge and Employability courses. This technology integration will help students make the transition to the world beyond school.

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ESSENTIAL UNIVERSAL SKILLS AND STRATEGIES

Knowledge and Employability courses emphasize the universal skills and strategies that are essential to all students, including the following:

- Interpersonal skills promote teamwork and respect for, support of and cooperation with others.
- Critical thinking promotes the analysis and appropriate applications of information.
- Creative thinking promotes the identification of unique connections among ideas and insightful approaches to questions and issues.
- Decision-making processes promote the making of timely and appropriate decisions.
- Problem-solving processes promote the ability to identify or pose problems and apply learning to consider the causes and dimensions of, and the solutions to, problems.
- Metacognition[2] enables students to become more aware of, and have greater control over, their own thinking and learning processes.

RELATIONSHIP TO OTHER COURSES

Each Knowledge and Employability course is consistent with the rationale, philosophy, program foundations and organization of other secondary courses. This consistency enables students, as appropriate, to progress through the Knowledge and Employability course sequence and/or to other secondary courses.

ENROLLMENT IN KNOWLEDGE AND EMPLOYABILITY COURSES

Students may take one or more courses in the sequence at any time during grades 8 through 12. Students may be enrolled in only Knowledge and Employability courses or in a combination of Knowledge and Employability and other secondary courses.

Information regarding the identification of students for enrollment in one or more courses can be accessed in the *Knowledge and Employability Courses Policy 1.4.2* and in the *Information Manual for Knowledge and Employability Courses, Grades 8–12*, 2006.

INTRODUCTION TO KNOWLEDGE AND EMPLOYABILITY ENGLISH LANGUAGE ARTS

The core responsibility of Knowledge and Employability English language arts courses is to foster and strengthen the development of language. Learning the foundational skills of communication enhances confidence, builds personal identity and enables individuals to create and sustain meaningful relationships. Becoming successful communicators at home, at school, at work and in the community enables students to experience personal satisfaction and become responsible, contributing citizens and lifelong learners.

The Importance of Language

The Nature of Language

Language is the basis of communication and the primary instrument of thought. Composed of interrelated and rule-governed symbols systems, language is a social and uniquely human means of exploring and communicating meaning. As well as being a defining feature of culture, language is an unmistakable mark of personal identity and is essential for forming interpersonal relationships, extending experience, reflecting on thought and action and contributing to society.

2. Metacognition: Learning-to-learn strategies; awareness of processes and strategies one uses when learning.

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Language Development

Language development is contextual. Students enhance their language abilities by using what they know, continuously and recursively, in new and more complex contexts and with increased sophistication. They reflect on and use prior knowledge to extend and enhance their language abilities and understanding. By learning and incorporating new language structures into their repertoire, and using them in a variety of contexts, students develop greater language fluency and proficiency.

Critical Thinking and Learning through Language

Critical thinking, learning and language are interrelated. Students use language to make sense of and bring order to their world and play active roles in learning communities within and beyond the classroom. They use language to examine new experiences and knowledge in relation to their prior knowledge, experiences and beliefs. They make connections, anticipate possibilities, reflect upon and evaluate ideas and determine courses of action. By becoming critical thinkers, students also become self-reliant, successful, contributing members of society.

Metacognition

Language study helps students develop an awareness of the strategies they use to complete learning tasks successfully. Students are encouraged to talk about, write about and otherwise represent themselves as learners. In essence, the study of language enables students to develop metacognition.

Metacognition involves reflection, critical awareness, analysis, monitoring and reinvention. Students who are engaged in metacognition:

- recognize the requirements of the task at hand
- reflect on the strategies and skills they may employ
- appraise their strengths and weaknesses in the use of these strategies and skills
- make modifications
- monitor the use of these reworked or new strategies in future situations.

ENGLISH LANGUAGE ARTS

Knowledge and Employability English language arts highlights six language arts—listening, speaking, reading, writing, viewing and representing.

Students engage all six language arts as they study texts and as they create their own texts in relevant situations for a variety of purposes and audiences. All of the language arts are interrelated and interdependent; proficiency in one strengthens and supports proficiency in the others.

Listening and Speaking

Oral language is the foundation of literacy. Through listening and speaking, individuals communicate thoughts, feelings, experiences, information and opinions and learn to understand themselves and others. Oral language carries a community's stories, values, beliefs and traditions. Aboriginal perspectives and experiences of oral language strengthen their communities and culture.

Listening and speaking enable students to explore ideas and concepts and to understand and organize their experiences and knowledge. They use oral language to learn, solve problems and reach goals. Students, at all grade levels, need to develop fluency and confidence in their oral language abilities in order to become discerning, lifelong learners. They benefit from many opportunities to listen and speak, both formally and informally, for a variety of purposes. Instruction integrates facets of Aboriginal oral language traditions as an example of the power of language for communities and their members.

Reading and Writing

Reading and writing are powerful means of communicating and learning. These language arts enable students to extend their knowledge and use of language, increase their understanding of themselves and others and experience enjoyment and personal satisfaction.

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Reading provides students with a means of accessing the ideas, views and experiences of others. By using effective reading skills and strategies, students construct meaning and develop thoughtful and critical interpretations of a variety of texts.

Writing enables students to explore, shape and clarify their thoughts and to communicate these thoughts to others. By using effective writing strategies, students discover and refine ideas and compose and revise with increasing confidence and skill.

Viewing and Representing

Viewing and representing are integral parts of contemporary life. These skills allow students to understand the ways in which images and language may be used to convey ideas, values and beliefs.

Viewing is an active process of attending to and comprehending such visual media as television, advertising images, films, diagrams, symbols, photographs, videos, drama, drawings, sculpture and paintings. Viewing enables students to acquire information and to appreciate the ideas and experiences of others. Many of the comprehension processes involved in reading, e.g., previewing, predicting and making inferences, may also be used in viewing.

Representing enables students to communicate information and ideas through a variety of media; e.g., video presentations, posters, diagrams, charts, symbols, visual art, drama, mime and models.

Inquiry and Research

Through the process of inquiry, students learn to manage ideas and information. Acquiring foundational skills in research will allow students to identify their current knowledge and construct new knowledge within a variety of contexts. The inquiry process includes planning, selecting, organizing, assessing and representing information and is also included in science and social studies courses.

Texts

In today's technological society, individuals not only access information and find enjoyment in print forms but in language forms as well. For example, oral communication and visual media are becoming increasingly important. Often these forms are used both in combination with one another and in conjunction with print forms. Therefore, texts refer not only to print but also to oral and visual forms that can be discussed, studied and analyzed. In addition, texts are affected and influenced by how they are transmitted; e.g., in computer, television, radio or book forms. Students require knowledge, skills and strategies in all six language arts to compose, comprehend and respond to such texts. Oral texts include storytelling, dialogues, speeches and conversations. Visual texts include pictures, diagrams, tableaux, mime and nonverbal communication. Combinations of oral, print or visual texts include videos, films, cartoons, drama and drum dancing.

Organization of the Program of Studies

General outcomes are broad statements identifying the knowledge, skills and attitudes that students are expected to demonstrate, with increasing competence and confidence, from Kindergarten to Grade 12. Five general outcomes, represented by the icons below, serve as the foundation for the program of studies. The student outcomes are interrelated and interdependent; each is to be achieved through a variety of listening, speaking, reading, writing, viewing and representing experiences.

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General Student Outcomes

Students will listen, speak, read, write, view and represent to:

- explore thoughts, ideas, feelings and experiences
- comprehend literature and other texts in oral, print, visual and multimedia forms and respond personally, critically and creatively
- manage ideas and information
- create oral, print, visual and multimedia texts and enhance the clarity and artistry of communication
- respect, support and collaborate with others.

Specific Outcomes

Specific outcomes are categorized under headings within each of the five general outcomes. The specific outcomes state the knowledge, skills and attitudes that students are expected to demonstrate by the end of each grade.

GENERAL AND SPECIFIC OUTCOMES FOR ENGLISH LANGUAGE ARTS 10-4, 20-4, 30-4

The aim of English language arts is to enable each student to understand and appreciate language and to use it confidently and competently in a variety of situations for communication, personal satisfaction and learning purposes.

Knowledge and Employability English language arts focuses on developing the basic language competencies needed for everyday living at home, in the community and in the workplace.

General Outcome 1

Students will listen, speak, read, write, view and represent to explore thoughts, ideas, feelings and experiences.

1.1 Discover possibilities
- 1.1.1 Form tentative understandings, interpretations and positions
- 1.1.2 Experiment with language, image and structure

1.2 Extend awareness
- 1.2.1 Consider new perspectives
- 1.2.2 Express preferences and expand interests
- 1.2.3 Set personal goals for language growth

General Outcome 2

Students will listen, speak, read, write, view and represent to comprehend literature and other texts in oral, print, visual and multimedia forms and respond personally, critically and creatively.

2.1 Construct meaning from text and context
- 2.1.1 Discern and examine context
- 2.1.2 Understand and interpret content
- 2.1.3 Engage prior knowledge
- 2.1.4 Use reference strategies and reference technologies

2.2 Understand and appreciate textual forms, elements and techniques
- 2.2.1 Relate form, structure and medium to purpose, audience and content
- 2.2.2 Relate elements, devices and techniques to created effects

2.3 Respond to a variety of print and nonprint texts
- 2.3.1 Connect themselves, text, culture and environment
- 2.3.2 Evaluate the relationship to realism and the appropriateness and significance of print and nonprint texts
- 2.3.3 Appreciate the effectiveness and artistry of print and nonprint texts

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General Outcome 3

Students will listen, speak, read, write, view and represent to manage ideas and information.

3.1 Determine inquiry or research requirements
- 3.1.1 Focus on purpose and presentation form
- 3.1.2 Plan an inquiry or research process and identify information needs and sources

3.2 Follow a plan of inquiry
- 3.2.1 Select, record and organize information
- 3.2.2 Evaluate sources and assess information
- 3.2.3 Form generalizations and conclusions
- 3.2.4 Review inquiry or research process and findings

General Outcome 4

Students will listen, speak, read, write, view and represent to create oral, print, visual and multimedia texts and enhance the clarity and artistry of communication.

4.1 Develop and present a variety of print and nonprint texts
- 4.1.1 Assess text creation context
- 4.1.2 Consider and address form, structure and medium
- 4.1.3 Develop content
- 4.1.4 Use production, publication and presentation strategies and technologies consistent with context

4.2 Improve thoughtfulness, effectiveness and correctness of communication
- 4.2.1 Enhance thought, understanding, support and detail
- 4.2.2 Enhance organization
- 4.2.3 Consider and address matters of choice
- 4.2.4 Edit text for matters of correctness

General Outcome 5

Students will listen, speak, read, write, view and represent to respect, support and collaborate with others.

5.1 Respect themselves and others and strengthen community
- 5.1.1 Use language and image to show respect and consideration
- 5.1.2 Appreciate diversity of expression, opinion and perspective
- 5.1.3 Recognize accomplishments and events

5.2 Work within a group
- 5.2.1 Cooperate with others and contribute to group processes
- 5.2.2 Understand and evaluate group processes

Under the specific outcome sections on the following pages, the six language arts are identified in brackets as they apply and/or relate to the outcome.

R – Reading
W – Writing
L – Listening
S – Speaking
V – Viewing
Rp – Representing

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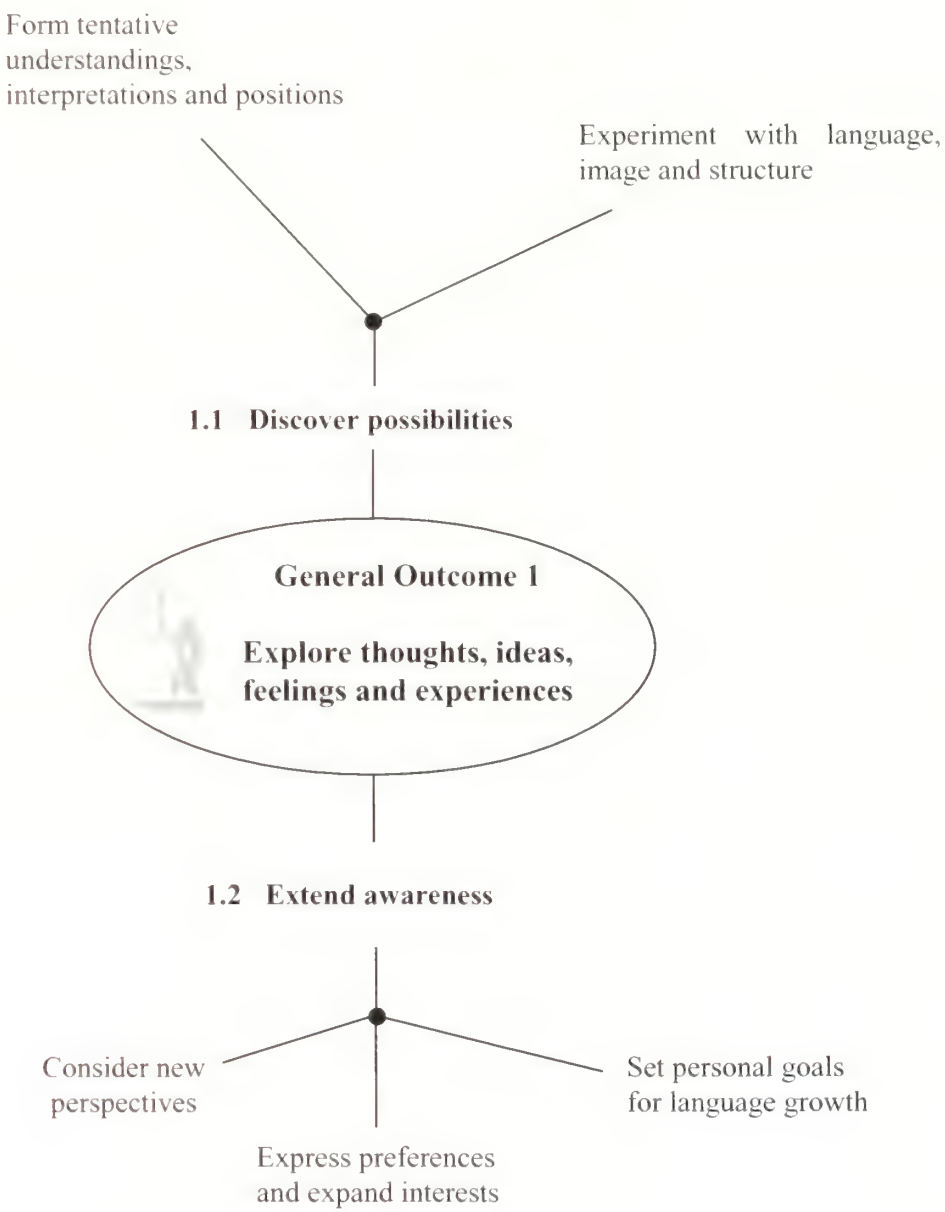
STUDENTS WILL LISTEN, SPEAK, READ, WRITE, VIEW AND REPRESENT TO:


Form tentative understandings, interpretations and positions
Experiment with language, image and structure
1.1 Discover possibilities
General Outcome 1
Explore thoughts, ideas, feelings and experiences
1.2 Extend awareness
Consider new perspectives
Set personal goals for language growth
Express preferences and expand interests

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GENERAL OUTCOME 1

Students will listen, speak, read, write, view and represent to explore thoughts, ideas, feelings and experiences.

INTRODUCTION

Exploration is fundamental to learning. The specific outcomes that support General Outcome 1 set the foundation for learning in the other outcomes. Students engage in exploration to discover possibilities and to extend their awareness. Through exploration, students begin to formulate their thoughts and ideas, organize and make sense of their experiences and acknowledge and express their feelings. Exploration enables students to discover and understand what they think and who they are. It also helps them to reflect on their strengths and weaknesses as language users and language learners.

As students become engaged in exploration, they express their preferences and interests and they set personal goals for language growth. When they are faced with a new task or assignment and when they study a new text, students explore possibilities and form tentative interpretations and positions. Students experiment with language and forms of expression to continually expand the horizon of opportunities that language learning offers to them. In this way, students consider new perspectives and form new understandings. Ultimately, through exploration, students expand their interest in a variety of texts.

Note: Knowledge and Employability English language arts emphasizes the exploration of language in relation to practical and everyday home, community and workplace applications.

Through talk and conversation, students make observations, ask questions, generate hypotheses, make predictions and form opinions. Often, students discover what they think or how they feel at the point of utterance.

Writing and representing help students to clarify and expand their thinking. When students use such means as dialogue journals to aid their exploration, and when they see their ideas, feelings and experiences in writing, they can reconsider, revise and elaborate on them in thoughtful ways. Students may also use diagrams, thought webs, collages, charts and other representational forms to explore ideas and interpretations and to make and present new connections among ideas.

Listening, reading and viewing also enable students to explore and consider new perspectives, gather and verify information, identify areas for further inquiry or research and develop support for opinions. A climate conducive to exploration and risk taking fosters learning in General Outcome 1.

Learning effective exploration strategies is interrelated with learning in the other general outcomes.

- Exploratory talk, writing and representation enhance students' comprehension by focusing their prior knowledge and experiences before listening, reading and viewing and when analyzing, evaluating and responding to texts (General Outcome 2).
- Exploration also helps students to find and manage information (General Outcome 3).
- Students are involved in exploration when deciding how to use language effectively when creating their own texts (General Outcome 4).
- Students often use exploratory talk when they work together to collaborate on projects and to develop a classroom learning community (General Outcome 5).

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1.1 Discover possibilities

ELA 10-4 **ELA 20-4** **ELA 30-4**

1.1.1 Form tentative understandings, interpretations and positions

Students will:

a. experiment with strategies that contribute to the formation of tentative understandings, interpretations and positions; e.g., pose questions, discuss, keep an open mind, reread, review and recognize that texts may be inaccurate or misleading (R, W, L, S, V, Rp)

b. form and communicate tentative understandings, interpretations and positions on ideas and information presented in print and nonprint texts through discussion or by using various communication technologies; e.g., telephone and e-mail (R, W, L, S, V, Rp)

1.1.2 Experiment with language, image and structure

Students will:

a. experiment with language, image and structure to create different effects for specific purposes and audiences; e.g., when creating components of a career portfolio, preparing a visual representation or completing workplace tasks (R, W, L, S, V, Rp)

b. experiment with a variety of strategies, activities and resources to explore ideas, observations, opinions, experiences and emotions; e.g., exploratory talk; keep a journal; take part in a sharing circle; interview a member of the community, a local employer or a coworker (R, W, L, S, V, Rp)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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1.2 Extend awareness

ELA 10-4	ELA 20-4	ELA 30-4

1.2.1 Consider new perspectives

Students will:

ELA 10-4	ELA 20-4	ELA 30-4
a. examine personal responses to new perspectives and identify factors that have influenced responses (R, W, L, S, V, Rp)	a. evaluate personal responses to determine the: • extent of the information included in the explanation • evidence offered to support the response • degree of support for the response (R, W, L, S, V, Rp)	
b. consider the ideas, perspectives and interpretations of others to broaden understandings (R, W, L, S, V, Rp)	b. compare their own ideas, perspectives and interpretations to those of others through a variety of strategies; e.g., discussion and pro–con/think–pair–share charts (R, W, L, S, V, Rp)	

1.2.2 Express preferences and expand interests

Students will:

a. identify and examine the personal text preferences and other factors influencing personal preferences; e.g., purpose, interest, peers, family, heritage, advertisements and technology (R, W, L, S, V, Rp)

b. apply strategies to expand their interests in print and nonprint texts and text creators; e.g., sharing reading/viewing/listening inventories, discuss the role marketing plays in shaping popular culture, visit a museum or a community cultural or art centre (R, W, L, S, V, Rp)

c. select and apply strategies to expand their interests in various text creations, e.g., Web sites, advertising and promotional texts, workplace manuals, CD–ROMs, movies and music videos, including the use of language, image, sound and structure (R, W, L, S, V, Rp)

d. explore and assess a range of print and nonprint texts to expand their interests, including those used in the community and the workplace; e.g., newspapers, live drama, workplace/community health information manuals and product promotional materials (R, W, L, S, V, Rp)

1.2.3 Set personal goals for language growth

Students will:

a. use guided peer and/or self-evaluation to assess their strengths and areas needing improvement, using a variety of strategies; e.g., checklists, skills inventories and discussion (R, W, L, S, V, Rp)

b. investigate and evaluate the language skills required to achieve attainable secondary, post-secondary and career goals, using appropriate strategies and resources; e.g., Web sites such as the Alberta Learning Information Service (ALIS) and the National Occupational Classification (NOC) system (R, W, L, S, V, Rp)

R – Reading	W – Writing	L – Listening	S – Speaking	V – Viewing	Rp – Representing

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1.2 Extend awareness (continued)

ELA 10-4 **ELA 20-4** **ELA 30-4**

1.2.3 Set personal goals for language growth (continued)

Students will:

c. create a plan to enhance language learning based on their personal goals and in relation to everyday home, community and workplace communication (R, W, L, S, V, Rp)

d. apply strategies to increase their personal potential; e.g., set short- and long-term goals, create an action plan and build a career portfolio (W, S, Rp)

e. demonstrate a willingness to continuously learn and grow as effective communicators (R, W, L, S, V, Rp)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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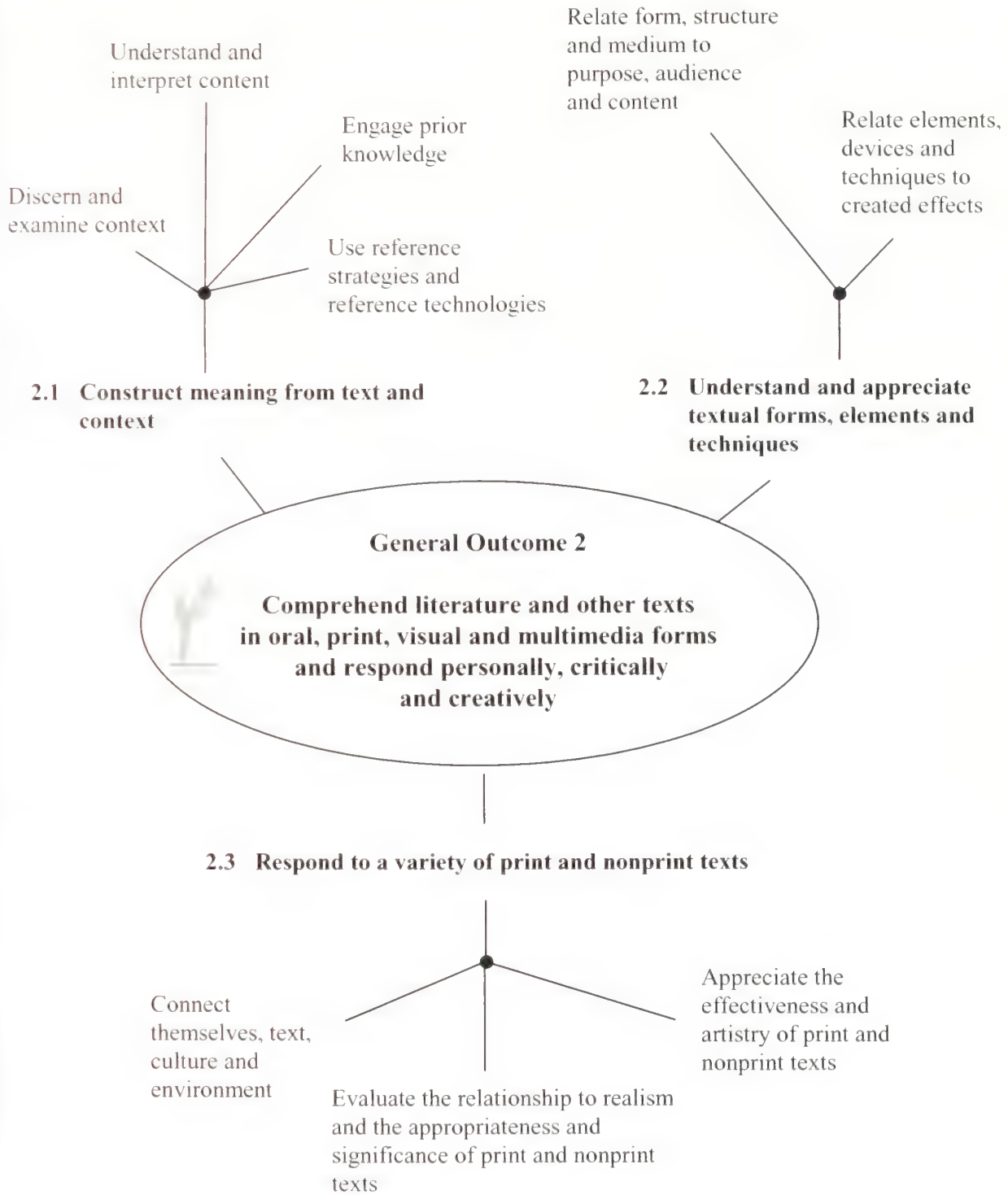
STUDENTS WILL LISTEN, SPEAK, READ, WRITE, VIEW AND REPRESENT TO:


Understand and interpret content
Engage prior knowledge
Discern and examine context
Use reference strategies and reference technologies
2.1 Construct meaning from text and context
Relate form, structure and medium to purpose, audience and content
Relate elements, devices and techniques to created effects
2.2 Understand and appreciate textual forms, elements and techniques
General Outcome 2
Comprehend literature and other texts in oral, print, visual and multimedia forms and respond personally, critically and creatively
2.3 Respond to a variety of print and nonprint texts
Connect themselves, text, culture and environment
Evaluate the relationship to realism and the appropriateness and significance of print and nonprint texts
Appreciate the effectiveness and artistry of print and nonprint texts

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GENERAL OUTCOME 2

Students will listen, speak, read, write, view and represent to comprehend literature and other texts in oral, print, visual and multimedia forms and respond personally, critically and creatively.

INTRODUCTION

Constructing meaning from texts is fundamental to English language arts. As students study texts in oral, print, visual and multimedia forms, they use a variety of strategies to determine the *what* of a text—the content that is being presented by the text creator. Students engage their prior knowledge of content as they encounter new texts. They identify and examine a text creator's purpose and audience and they consider the interplay between text and context. Students use their skills as listeners, readers and viewers to detect the tones and emotional ranges adopted by text creators. They use references, including the understandings and interpretations of others, to assist them in forming their own understandings and interpretations of texts.

Note: The *what* and the *how* of a text (text content and text form) have been separated under the first two headings of General Outcome 2 to allow learning outcomes to be clearly specified. In their study of texts, students should be encouraged to understand the relationship between form and content.

Students also use a variety of strategies to understand the craft of the text creator and the *how* of a text—the form that the text creator has fashioned and the textual elements, rhetorical devices and stylistic techniques that the text creator has employed. By studying a variety of texts in oral, print, visual and multimedia forms, students develop an understanding of the relationship between a text's content and its form. They identify the effects that are created by particular forms, elements, devices and techniques and relate a text's form, structure and medium to its purpose, audience and content.

Knowledge and Employability English language arts emphasizes the comprehension of print and nonprint texts in relation to practical and everyday home, community and workplace applications.

Students respond personally, critically and creatively—often simultaneously—to the contents and contexts of a variety of texts and to the craft of a variety of text creators. They respond personally by relating texts to their own experiences, feelings, values and beliefs. They respond critically by making interpretations and by evaluating ideas, forms, devices and techniques. They respond creatively by visualizing the settings and situations that are presented in texts and by imagining the persons and characters inhabiting texts. By using their creative imaginations, students synthesize responses that take them deeply into the world of a text or that extend their own worlds by transforming their understandings and perspectives.

Learning effective comprehension and response strategies is interrelated with learning in all of the other general outcomes.

- Exploratory talk and writing enhance and extend student understandings and evaluations of texts (General Outcome 1).
- Student understandings of text forms, structures and media help them to find information when they are involved in inquiry (General Outcome 3).
- The study of texts provides students with a range of topics and organizing structures for their own text creation (General Outcome 4).
- As students respond positively to the texts created by their classmates, they help to encourage others and to build a community of learners (General Outcome 5).

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2.1 *Construct meaning from text and context*

ELA 10-4	ELA 20-4	ELA 30-4

2.1.1 Discern and examine context

Students will:

a. examine a variety of texts and identify their audience and purpose for creation to inform, persuade, entertain or inspire; e.g., advertisements, instruction manuals, newspapers, magazines, Web sites, CD–ROMs, music lyrics and documentary dramas (R, L, V)

b. identify the key messages and features of a text that provide information about the creator's purpose and intended audience; e.g., the use of jargon, idioms, specialized workplace terminology and illustrations (R, L, V)

c. recognize that a variety of factors influence the creation of texts; e.g., constraints of time and space, audience, culture, societal norms and historical background (R, L, V)

d. use references to gain the historical and societal background and to enhance their understanding of specific texts; e.g., personal experiences, community leaders, teachers and Elders (R, L, V)

e. recognize the impact that personal contexts, e.g., experience and prior knowledge, have on the construction of meaning in a text (R, L, V)

2.1.2 Understand and interpret content

Students will:

a. use a variety of appropriate reading strategies to enhance their comprehension of print texts; e.g., skim; read out loud; reread; form questions; make predictions; use contextual clues, graphic organizers and summarization (R, L, V)

b. summarize the controlling idea, supporting ideas, details and conflicts in a text to enhance understanding (R, L, V)

c. categorize parts of a plot using a variety of strategies, e.g., graphic organizers and technology as appropriate, including introduction, characters, setting, initial incident, rising action, climax, falling action and resolution, and assess the effectiveness of those strategies in relation to the purpose and audience (R, L, V)

d. recognize the relationships among plot, setting, character and conflict by relating to prior knowledge, personal experience and new ideas (R, L, V)

e. identify and examine change in a character as a result of an event within a plot by examining elements of character, e.g., personality traits, motivation, relationships, attitudes, values, consistency of behaviour and plausibility of change, and relate a character's behaviour to their own personal experience, as appropriate (R, L, V)

f. apply appropriate vocabulary strategies to enhance their comprehension of oral, print and multimedia texts; e.g., word attack skills, contextual clues and dictionary skills (R, L, V)

g. paraphrase directions or messages to enhance their comprehension and complete tasks; e.g., oral directions at the workplace, assignments, manuals, diagrams, forms, lists and labels (R, L, V)

h. determine a speaker's intent by identifying mood indicators; e.g., volume, tone, irony and sarcasm (L, V)	h. examine and evaluate the effectiveness of verbal cues in conveying a speaker's intent; e.g., volume, tone and mood (L, V)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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2.1 Construct meaning from text and context (continued)

ELA 10-4	ELA 20-4	ELA 30-4

2.1.2 Understand and interpret content (continued)

Students will:

i. identify nonverbal cues that support a speaker's intent; e.g., gestures and facial expressions (V)

i. evaluate the effectiveness of nonverbal cues in conveying a speaker's intent (V)

j. differentiate between literal and figurative statements and/or representations, describe images developed in texts, recognize imagery in a variety of texts, e.g., advertising, comic strips, comedy in television and movies, popular music, and recognize the meaning and purpose of these statements, representations and images (R, L, V)

k. identify visual elements, e.g., graphics, lists, graphs and charts, and the use of sound, e.g., music, sound effects and silence, and examine their contribution to the meaning of texts; e.g., the use of symbols and music in advertising by sports teams and food outlets (L, V)

2.1.3 Engage prior knowledge

Students will:

a. relate their previous knowledge and experiences to enhance their understanding of new texts (R, L)

b. recognize that past experiences influence their understandings and interpretations of texts (R, L)

Use reference strategies and reference technologies

Students will:

a. record information sources in a bibliography or footnotes, accurately and completely, using a consistent and appropriate style (W)

b. use a variety of reference strategies and technologies to aid their understanding and create their own reference materials; e.g., take notes; use library catalogues; create a personalized dictionary, telephone/address books and a World Wide Web/URL address list (W)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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2.2 *Understand and appreciate textual forms, elements and techniques*

ELA 10-4 **ELA 20-4** **ELA 30-4**

2.2.1 Relate form, structure and medium to purpose, audience and content

Students will:

a. identify common text forms and their purposes, including communication forms, e.g., letters, e-mail messages and memoranda, and literary forms; e.g., poems, narratives, dramatizations and oral stories (R, L, V)

b. recognize that audience factors, e.g., gender and culture, influence form, structure and media (R, L, V)

c. recognize that some forms, structures and media are more appropriate than others in achieving a particular purpose with an intended audience; e.g., television and radio programs and advertisements use short time segments and pacing to gain and retain audience attention (R, L, V)

d. identify organizational patterns and structural features that contribute to the purpose and content in common texts; e.g., headlines in newspapers; photographs in menus; text organizers such as tables of contents, indexes, headings and italic and boldface formatting (R, L, V)

2.2.2 Relate elements, devices and techniques to created effects

Students will:

a. recognize the use of irony, humour, simile, metaphor, personification and symbols to contribute to a theme and to create a specific effect on the audience (R, L, V)

b. recognize the use of narrative hooks, foreshadowing, flashbacks, suspense and surprise endings to contribute to the effectiveness of plot development (R, L, V)

c. recognize that elements of effective oral, visual and multimedia presentations, e.g., music, colour, lighting, movement, gesture, space and shape, are used to create specific effects (R, L, V)

d. identify and examine reasons for, and effectiveness of, the elements, devices and techniques used in a variety of print and nonprint texts; e.g., advertisements, music videos, films, workplace documents and Web pages (R, L, V)

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2.3 Respond to a variety of print and nonprint texts

ELA 10-4 **ELA 20-4** **ELA 30-4**

2.3.1 Connect themselves, text, culture and environment

Students will:

a. identify and consider personal moral, ethical and cultural perspectives when studying texts and reflect on how perspectives may change as a result of interpretation and discussion (R, L, V)

b. compare the choices and motives of characters/people portrayed in print and nonprint texts with themselves and others and recognize that the choices and motives presented in texts may provide insight into the behaviours of themselves and others (R, L, V)

c. recognize Canadian content and portrayals of Canadian culture and society in print and nonprint texts (R, L, V)

2.3.2 Evaluate the relationship to realism and the appropriateness and significance of print and nonprint texts

Students will:

a. assess the appropriateness of their own and others' understandings and interpretations of texts by referring to specific evidence (R, L, V)

b. assess the settings and plots of texts in terms of created reality and plausibility (R, L, V)

c. examine the images in print and nonprint texts in terms of created reality and appropriateness to purpose; e.g., sensationalizing portrayals of everyday life; representation of age/gender; use of pace, music and camera angles (R, L, V)

2.3.3 Appreciate the effectiveness and artistry of print and nonprint texts

Students will:

a. examine and appreciate the effectiveness and artistry of techniques used in texts to present emotions, ideas and information and evoke response (R, L, V)

b. examine and appreciate how graphic design techniques, e.g., graphic quality, colour, sound, camera angle, lighting, composition and perspective, create and/or manipulate emotion, mood and point of view (R, L, V)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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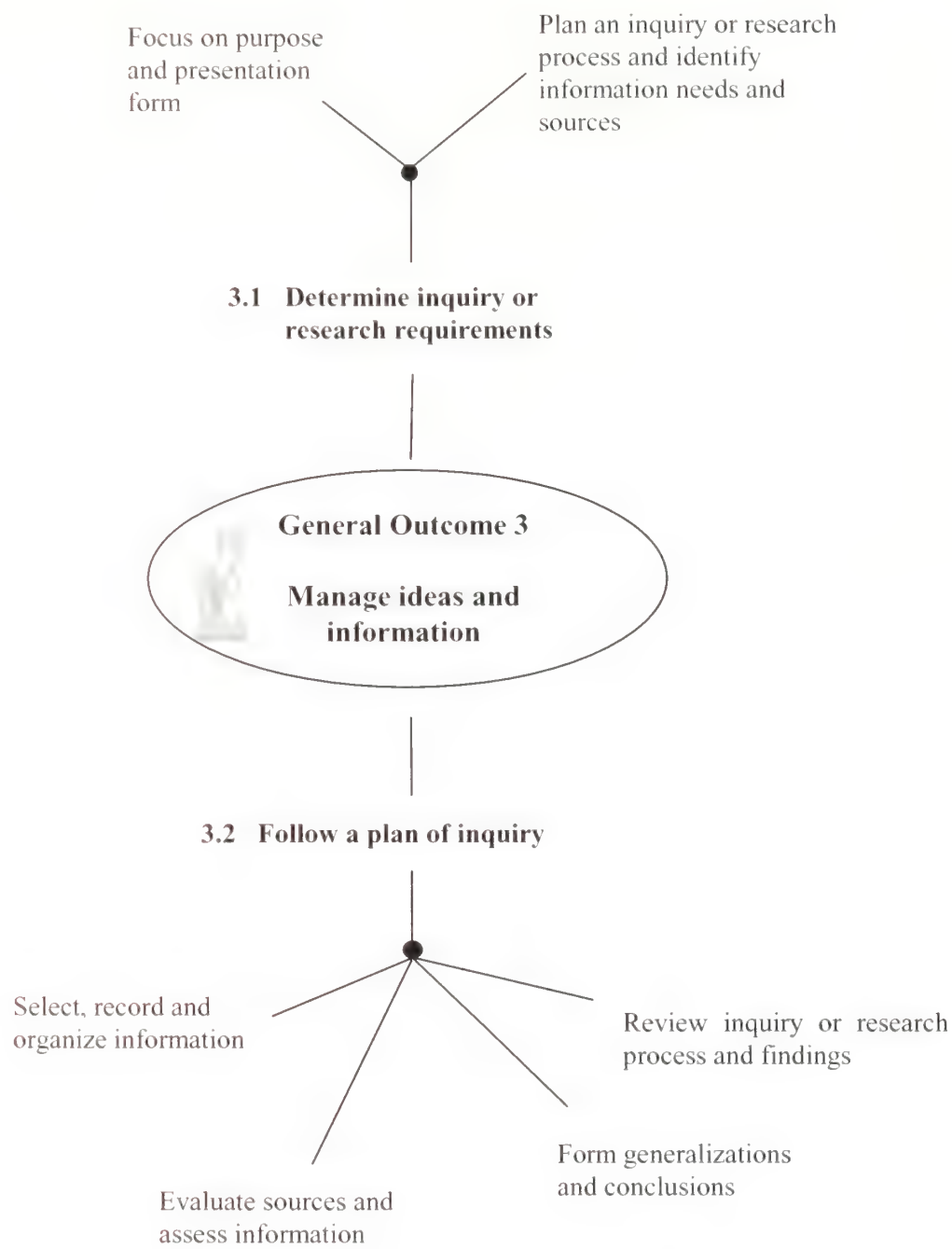
STUDENTS WILL LISTEN, SPEAK, READ, WRITE, VIEW AND REPRESENT TO:


Focus on purpose and presentation form
Plan an inquiry or research process and identify information needs and sources
3.1 Determine inquiry or research requirements
General Outcome 3
Manage ideas and information
3.2 Follow a plan of inquiry
Select, record and organize information
Review inquiry or research process and findings
Form generalizations and conclusions
Evaluate sources and assess information

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GENERAL OUTCOME 3

Students will listen, speak, read, write, view and represent to manage ideas and information.

INTRODUCTION

Note: Knowledge and Employability English language arts emphasizes the management of ideas and information in relation to practical and everyday home, community and workplace applications.

Students manage ideas and information to fulfill particular inquiry or research needs. Such needs may include communicating with a particular audience, considering a variety of literary interpretations or gathering details that contribute to the verisimilitude of a created text.

Students develop the ability to determine:

- why they need to pursue an inquiry or to conduct research
- what types of questions need to be answered
- what types of data and information are needed
- where to locate information sources
- how to record and organize selected information
- if chosen sources and gathered information satisfy the requirements of purpose, audience and situation
- if chosen sources are reputable and of good quality.

Students integrate and synthesize their findings and, in the course of managing ideas and information, formulate generalizations and conclusions and develop personal perspectives.

Students use inquiry or research findings for a variety of purposes. A finding may simply be a new understanding that a student records in a journal for future use. Findings may also include facts, examples or generalizations that are used immediately by students involved in text creation. Findings often lead students to formulate new questions for further research.

As they progress through their senior high school English language arts courses, students develop strategies for managing ideas and information with increasing independence and sophistication. As well, they evaluate their own and others' inquiry and research processes and findings with a view to refining such processes and considering alternative ways of conducting inquiry or research in the future.

Learning effective strategies for managing ideas and information is interrelated with learning in the other general outcomes.

- Students explore ideas to frame questions and plan research processes (General Outcome 1).
- When students examine sources to identify ideas and gain information, they are engaged in comprehending and responding to text (General Outcome 2).
- As they record and organize the information and other material that they have uncovered, students are engaged in the creation of text (General Outcome 4).
- Students often collaborate to conduct research or pursue inquiry (General Outcome 5).

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3.1 Determine inquiry or research requirements

ELA 10-4 **ELA 20-4** **ELA 30-4**

3.1.1 Focus on purpose and presentation form

Students will:

a. identify topics for research through a variety of strategies, e.g., discussion, brainstorms and webs, considering the audience, e.g., scope and potential presentation form, and the purpose; e.g., to inform, make decisions and persuade (R, W, L, S, V, Rp)

b. establish a focus for text creation and determine the scope by identifying an effective, controlling idea, issue or question (W, S, Rp)

c. create categories or questions to guide an inquiry (W, L, S)

d. refine the scope and direction of an inquiry by identifying the breadth and depth of the topic and the limitations, time availability, purpose, audience and form of presentation (W, L, S)

3.1.2 Plan an inquiry or research process and identify information needs and sources

Students will:

a. create an inquiry or research plan, considering a variety of factors; e.g., breadth and depth of prior knowledge, information gaps, appropriate collection tools and format, sources of information, purpose, audience, time and potential presentation form (W, L, S)

b. use questions, discussion, reflection and other appropriate strategies to guide and monitor an inquiry or research plan (W, S)

c. identify potential strategies and technologies for gathering, generating and recording information; e.g., Web sites; encyclopedias; interviews; skim and scan; outlines; webs; identify key words, phrases and relevant information; take notes in point form (R, W, S)

R – Reading W – Writing L – Listening S – Speaking V – Viewing Rp – Representing

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3.2 Follow a plan of inquiry

ELA 10-4 **ELA 20-4** **ELA 30-4**

3.2.1 Select, record and organize information

Students will:

a. select information and support materials appropriate to the purpose from a variety of print and nonprint sources, e.g., museums, government agencies, Elders, business people, periodicals, the Internet, CD–ROMs, television, radio and surveys, using a variety of strategies; e.g., skim and scan, view, question and interview (R, W, L, S, V)

b. use a variety of strategies to organize and record information; e.g., take notes in point form, outlines, webs, categorize and guide questions (R, W, L, S)

c. identify and/or develop appropriate details to support the focus of an inquiry, using a variety of strategies; e.g., map/webs, graphic organizers and outlines (W, S, V)

d. use and manage a variety of oral, print, visual and multimedia resources appropriate to a topic; e.g., textbooks, books, encyclopedias, graphs, diagrams, posters, pictures, films, databases, CD–ROMs, Web sites and the Internet (R, W, L, S, V, Rp)

e. record information accurately and completely, using a consistent and appropriate style (W)

f. apply guidelines for Internet use; e.g., confidentiality, respect copyright and use rules for citing sources (R, W, L, S, V, Rp)

3.2.2 Evaluate sources and assess information

Students will:

a. assess whether information sources are credible and appropriate to the purpose, audience and form of the presentation (R, W, L, S, V, Rp)

b. assess whether the information gathered is reliable, complete, current and significant to determine its usefulness to the overall purpose, audience and form of the presentation (R, L, V)

c. identify multiple viewpoints and evaluate the relevancy, quality, credibility and bias of sources and information (R, L, V)

3.2.3 Form generalizations and conclusions

Students will:

a. form generalizations by integrating new information with prior knowledge (R, L, V)

b. distinguish between support and generalization and provide evidence for generalizations and conclusions (R, L, V)

c. draw conclusions that are appropriate to their findings, reflect their own understandings and are consistent with the topic, purpose and situation (R, L, V)

d. use appropriate strategies, e.g., cause and effect, pros and cons, plus/minus/interesting (PMI), storyboards and Venn diagrams, when analyzing, synthesizing and evaluating information to draw conclusions or form generalizations (R, W, L, V)

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3.2 Follow a plan of inquiry (continued)

ELA 10-4 **ELA 20-4** **ELA 30-4**

3.2.4 Review inquiry or research process and findings

Students will:

a. evaluate the effectiveness of the strategies used to guide the research process and identify strategies to improve future research (W, L, S)

b. review the appropriateness, accuracy and significance of findings, conclusions and generalizations (W, L, S)

c. develop a plan to enhance the craftsmanship and accuracy of current and future work and celebrate and take pride in their efforts and accomplishments (W, L, S, Rp)

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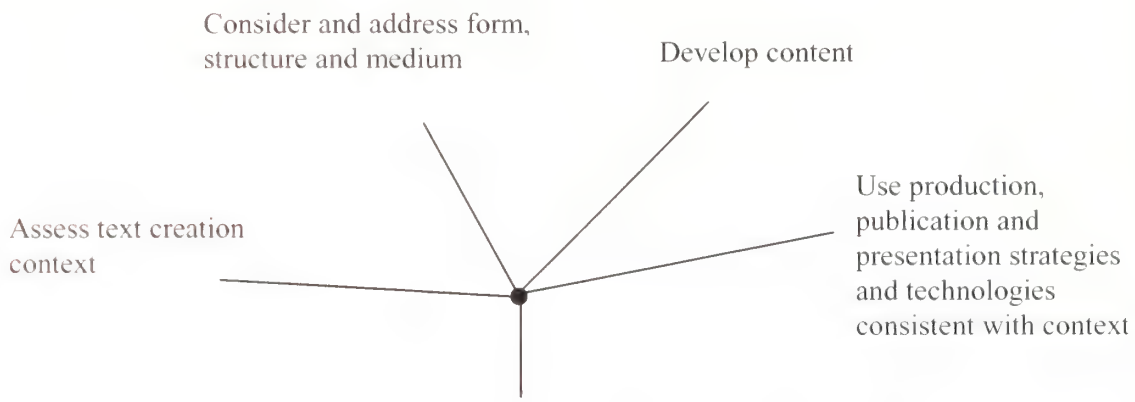
STUDENTS WILL LISTEN, SPEAK, READ, WRITE, VIEW AND REPRESENT TO:

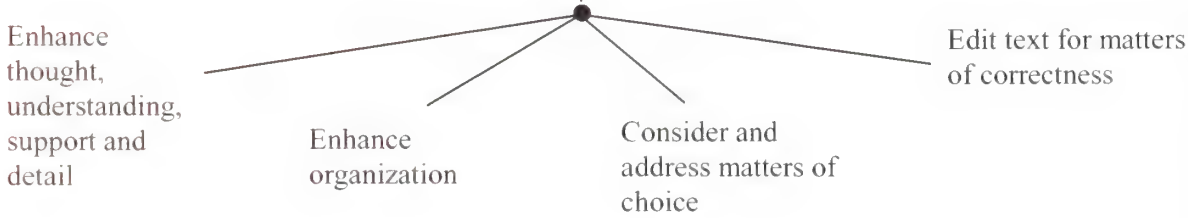

Consider and address form, structure and medium
Develop content
Assess text creation context
Use production, publication and presentation strategies and technologies consistent with context

4.1 Develop and present a variety of print and nonprint texts

General Outcome 4

Create oral, print, visual and multimedia texts and enhance the clarity and artistry of communication

4.2 Improve thoughtfulness, effectiveness and correctness of communication


Enhance thought, understanding, support and detail
Enhance organization
Consider and address matters of choice
Edit text for matters of correctness

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GENERAL OUTCOME 4

Students will listen, speak, read, write, view and represent to create oral, print, visual and multimedia texts and enhance the clarity and artistry of communication.

INTRODUCTION

Students draft and develop a variety of oral, print, visual and multimedia texts as a means of discovering, understanding and communicating their thoughts, feelings and experiences. When beginning the task of text creation, students assess context: they determine the purpose they wish to accomplish, they identify their audience and they consider the nature of the communication situation. They also develop or use form, structure and media that are consistent with context.

Students develop ideas through text creation. They share their experiences and communicate the events that are significant to them. They create images and develop themes imaginatively and artistically. By creating texts in a variety of oral, print, visual and multimedia forms, students develop their personal voices and learn the craft of the text creator.

Note: Knowledge and Employability English language arts emphasizes creating and enhancing print, visual and multimedia texts in relation to practical and everyday home, community and workplace applications.

As students produce texts for publication or presentation, they ensure that the expectations of the text creation task and the requirements of the communication situation have been met. They also consider the time and space limitations of a particular text creation, publication or presentation situation.

Students develop confidence and skill by sharing thoughts, ideas and experiences through formal and informal presentations. They select and use presentation technologies that are appropriate to the purpose, audience and communication situation.

Students enhance the communicative power of their texts by assessing and revising thought and detail, organization, matters of choice and matters of correctness. They develop an understanding of how language works and they use the specialized terminology of the discipline of English language arts to communicate that understanding.

Learning effective strategies for creating text and for enhancing the thoughtfulness, effectiveness and correctness of communication is interrelated with learning in the other general outcomes.

- Students explore text creation possibilities and experiment with language, image and structure (General Outcome 1).
- The oral, print, visual and multimedia texts under study provide vicarious experiences, new perspectives and potential forms and media that students may use for speaking, writing and representing (General Outcome 2).
- Students locate, gather, record and organize material to communicate ideas and information (General Outcome 3).
- Students work in groups to complete tasks and assignments and to collaborate on text creation (General Outcome 5).

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4.1 Develop and present a variety of print and nonprint texts

ELA 10-4 **ELA 20-4** **ELA 30-4**

4.1.1 Assess text creation context

Students will:

a. determine the purpose for text creation; e.g., to inform, explain, persuade, build relationships or entertain (W, L, S, Rp)

b. consider the audience factors that affect text creation; e.g., age, gender, audience size and proximity, culture and positions of authority (W, S, Rp)

c. identify the expectations and constraints of a communication; e.g., format, standards of quality, availability of resources and time (W, S, Rp)

d. recognize that the depth and breadth of content will affect the format, structure and medium (W, S, Rp)

4.1.2 Consider and address form, structure and medium

Students will:

a. select a text form consistent with the purpose and content; e.g., photo essay in their career portfolio that includes work experience and other community partnerships (W, L, S)

b. use structures consistent with the form, content and purpose; e.g., chronological order when creating a résumé, narrative or historical timeline; videotape an interview with a member of the business community or an employer (W, S, Rp)

c. use a medium appropriate to the content and context; e.g., television advertisement targeting specific audiences such as youth, men or women (W, S, Rp)

d. apply common conventions when creating oral, print, visual and multimedia texts; e.g., volume of a multimedia presentation; format of letters, memorandums and e-mail messages; structure of a résumé (W, S, Rp)

4.1.3 Develop content

Students will:

a. take ownership of their text creation by selecting or crafting a topic, concept or idea that is personally meaningful and engaging (W, S, Rp)

b. create content appropriate to the purpose, audience, situation and medium and incorporate appropriate examples from their personal experience (W, S, Rp)

c. apply appropriate prewriting strategies, e.g., graphic organizers and technology, as appropriate, discussion, brainstorms, webs, outlines, journals and notes, to explore, develop and support their own and new ideas, opinions and points of view (W, S, Rp)

d. create a variety of print, oral, visual and/or multimedia texts that reflect a controlling idea, focus, purpose and audience, including:
   - functional writing, e.g., an advertisement for a newspaper, résumé, cover letter, business letter, using electronic templates as appropriate
   - real and/or sample home- and work-related forms using a variety of resources; e.g., Social Insurance Number (SIN) form, template on Human Resources Development Canada (HRDC) Web site, job application, bank account application and income tax template
   - computer-generated and/or other presentations to demonstrate the interview process, workplace task(s) and/or to provide other information
   - narrative, descriptive, persuasive and expository paragraphs and three- to five-paragraph essays appropriate to language growth for home, community and workplace applications (W, S, Rp)

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4.1 Develop and present a variety of print and nonprint texts (continued)

ELA 10-4 **ELA 20-4** **ELA 30-4**

4.1.4 Use production, publication and presentation strategies and technologies consistent with context

Students will:

a. create presentations and select strategies and technologies appropriate to the environment, purpose, audience and form and recognize the need for preparedness in effective communication (W, S, Rp)

b. create presentations by integrating information gathered from various sources; e.g., use various audio and visual technologies and a variety of software, applying appropriate common conventions (W, S, Rp)

c. develop and deliver oral, visual and multimedia presentations, using voice production factors, nonverbal factors, e.g., tone, volume, eye contact, gestures and posture, and visual production factors, e.g., colour, contrast and movement, appropriate to the purpose, audience and situation (W, S, Rp)

d. control aspects of style, e.g., font, size, style, colour, spacing of text, image placement, sound and video links, within the presentation form or product for consistency and/or to convey meaning (W, S, Rp)

e. demonstrate appropriate keyboarding techniques, e.g., use proper fingering when using alphabet and punctuation keys, and use a variety of strategies to increase keyboarding speed and accuracy (W, S, Rp)

f. demonstrate a moral and ethical approach in the use of graphics, text and multimedia in presentations by citing sources as appropriate (W, S, Rp)

g. use a consistent style when crediting sources of information in a bibliography and in footnotes (W, S, Rp)

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4.2 Improve thoughtfulness, effectiveness and correctness of communication

ELA 10-4 **ELA 20-4** **ELA 30-4**

4.2.1 Enhance thought, understanding, support and detail

Students will:

a. confirm the controlling idea or desired unifying effect of a text (W, S, Rp)

b. review the accuracy and specificity of details, events, images, facts and other data intended to support a focus, controlling idea or issue and add information to support/develop as needed (W, S, Rp)

c. demonstrate responsibility for following appropriate security and safety measures when using technology and the Internet; e.g., use appropriate language and etiquette, apply ergonomics to promote personal health and well-being and respect the products and privacy of others (W, S, Rp)

d. create, enhance and evaluate the effectiveness of a variety of presentation forms; e.g., written/oral reports, posters, multimedia presentations, charts, collages, cartoons and Web pages (W, S, Rp)

4.2.2 Enhance organization

Students will:

a. assess the beginning of a text in progress and revise as needed to consider the plan, purpose, audience and medium (W, S, Rp)

b. review the organizational components of a text in progress to strengthen the effectiveness of the components as units of thought or experience; e.g., paragraphs in a letter of application, components of a résumé or sections/slides in a multimedia presentation (W, S, Rp)

c. assess the closing of a text in progress and revise as needed to consider plan, purpose, audience and medium and to ensure an appropriate conclusion (W, S, Rp)

d. manipulate graphics and text to effectively communicate a topic (W, S, Rp)

4.2.3 Consider and address matters of choice

Students will:

a. select and use the effective techniques, elements and matters of choice appropriate to the purpose, audience and medium; e.g., vocabulary, expressions, sentence patterns and structures, illustrations, artwork and Internet links (W, S, Rp)

b. demonstrate self-direction, self-discipline and the ability to work independently and effectively to improve products and/or presentations (R, W, L, S, V, Rp)

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ELA 10-4 **ELA 20-4** **ELA 30-4**

4.2.4 Edit text for matters of correctness

Students will:

a. use appropriate tools to assist in creating and revising text; e.g., handbooks, exemplars, models, dictionaries and spell checks/grammar checks on word processors (R, W, S, Rp)

b. revise texts to ensure clarity and coherence; e.g., editing for punctuation, spelling, usage, grammar, sentence structure, paragraph transitions, transitional devices, style and vocabulary (R, W, S, Rp)

c. apply basic capitalization, punctuation and spelling conventions, using appropriate tools; e.g., dictionaries, handbooks and spelling software/technology (R, W, S, Rp)

d. identify parts of sentences and common sentence structures, e.g., simple, compound and complex, and use transitional devices, as appropriate, to correct common errors in sentences; e.g., run-on sentences and fragments (R, W, S, Rp)

e. identify the parts of speech in their own and others' texts, e.g., nouns, pronouns, verbs, adjectives and adverbs, to ensure correct subject–verb agreement, pronoun use and sentence structure (R, W, S, Rp)

f. recognize that certain communication situations demand particular attention to correctness of punctuation, spelling, grammar, usage and sentence construction; e.g., résumés, application forms and letters, job interviews (R, W, S, Rp)

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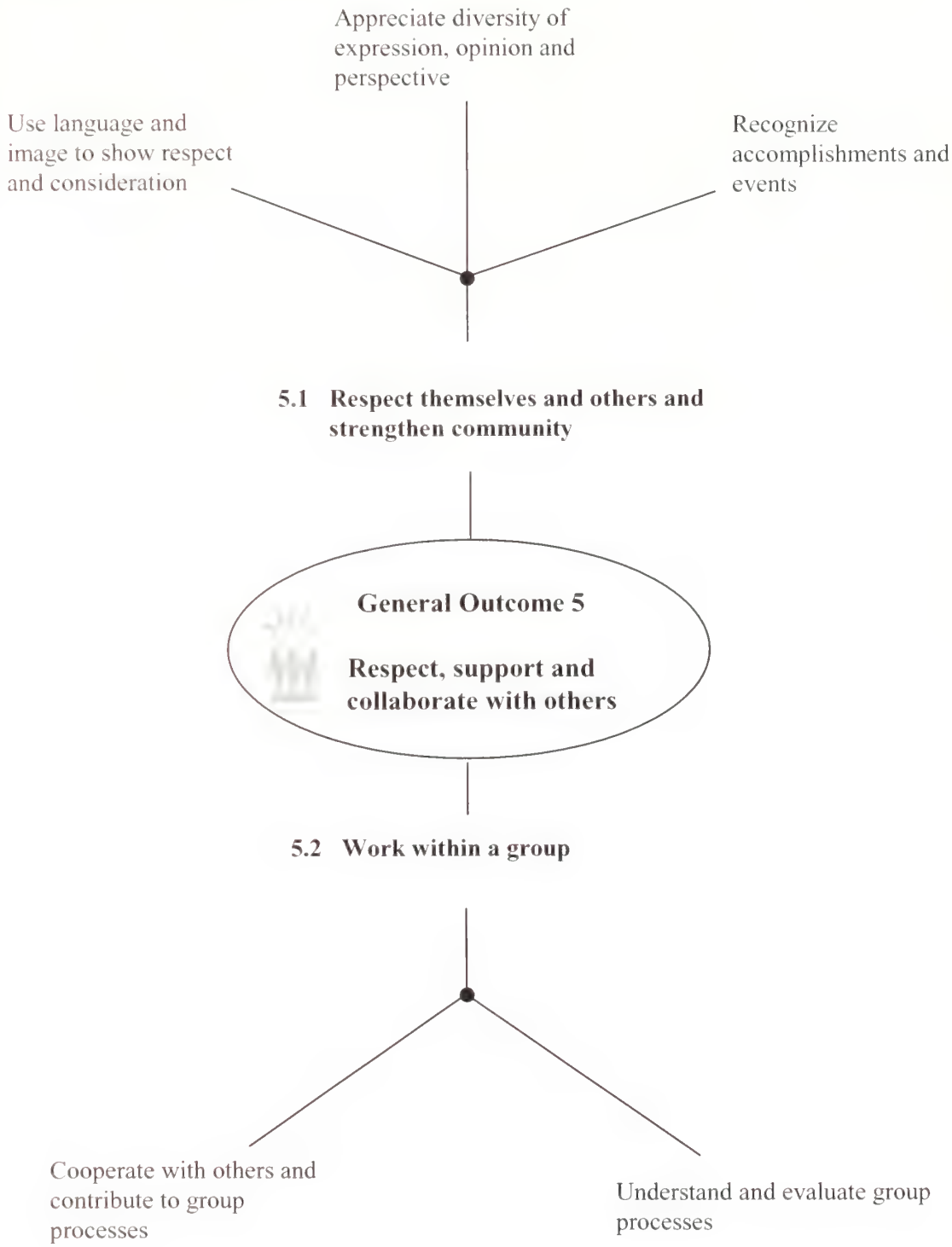
STUDENTS WILL LISTEN, SPEAK, READ, WRITE, VIEW AND REPRESENT TO:


Appreciate diversity of expression, opinion and perspective
Use language and image to show respect and consideration
Recognize accomplishments and events
5.1 Respect themselves and others and strengthen community
General Outcome 5
Respect, support and collaborate with others
5.2 Work within a group
Cooperate with others and contribute to group processes
Understand and evaluate group processes

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GENERAL OUTCOME 5

Students will listen, speak, read, write, view and represent to respect, support and collaborate with others.

INTRODUCTION

As students collaborate with others, they use language to show respect and consideration. Together, students access, understand, use and create texts when seeking answers to questions regarding the human condition. They appreciate the diversity of expression, opinion and perspective displayed by other students in their community of learners; they willingly share their personal knowledge, expertise and perspectives to help build and strengthen that community. They learn to use language in ways that demonstrate sensitivity to the feelings of their peers and enrich the classroom atmosphere.

Students develop and display positive attitudes that are observable in the verbal and nonverbal communication they exhibit. Students' positive attitudes are displayed as they celebrate their own accomplishments and honour the accomplishments of their classmates. As they recognize events of importance to their communities and their cultures, students come to understand their personal connections to community in a broader sense.

Note: Knowledge and Employability English language arts emphasizes that students respect and advocate for themselves and others, and demonstrate support and collaboration with others, in relation to practical and everyday home, community and workplace applications.

Students learn collaboration skills by working well together. They discuss in groups, build on others' ideas and plan and work together to meet common goals. They learn to use language to reflect upon their own behaviours and values and the behaviours and values of others. They participate fully and positively in a classroom community.

As they collaborate with others, students demonstrate that they understand and employ group processes. They cooperate with others as they contribute to the processes their groups are using to complete tasks. They assess and evaluate the work that their groups have accomplished, and the processes that their groups have used, so that future collaboration may benefit from the understandings they have developed.

Students learn the importance of respecting, supporting and collaborating with others. It is these processes that set the context for students to experience success in the English language arts classroom, at home, in the community and at the workplace.

Learning effective strategies for collaborating with others is interrelated with learning in the other general outcomes.

- Students work collaboratively to discover possibilities and to experiment with language and forms (General Outcome 1).
- Students learn from the understandings and interpretations of their classmates as they comprehend and respond to oral, print, visual and multimedia texts (General Outcome 2).
- Students often work collaboratively to conduct inquiry and research and to share findings (General Outcome 3).
- Students work collaboratively on text creation: they discuss topics and forms of expression, they act as peer editors to assess their classmates' texts and to offer constructive suggestions for improvement and they often work together to deliver a presentation (General Outcome 4).

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5.1 Respect themselves and others and strengthen community

ELA 10-4 **ELA 20-4** **ELA 30-4**

5.1.1 Use language and image to show respect and consideration

Students will:

a. use inclusive language and behaviour and communicate or create texts in ways that demonstrate respect for people of different heritage, cultures, genders, ages, abilities, opinions and communities, including Aboriginal peoples and communities (W, S, Rp)

b. recognize positive and negative portrayals of persons in life and characters in literature and demonstrate sensitivity to the feelings of others (R, W, L, S, V, Rp)

c. differentiate between constructive criticism and ridicule, and between irony and sarcasm, and use appropriate strategies to show respect (R, W, L, S, V, Rp)

d. monitor the use of verbal and nonverbal communication to convey inclusion, respect and consideration (W, L, S, V, Rp)

5.1.2 Appreciate diversity of expression, opinion and perspective

Students will:

a. recognize and demonstrate respect for diversity, individual differences and perspectives (R, W, L, S, V, Rp)

b. demonstrate an appreciation for diversity of thought and expression and select, monitor and modify, as needed, appropriate strategies for appreciating diversity (R, W, L, S, V, Rp)

c. examine the ways in which selected works of literature, and other print and nonprint texts, influence individual and group values and behaviours (R, W, L, S, V, Rp)

5.1.3 Recognize accomplishments and events

Students will:

a. use language and image to honour and/or recognize their own and others' accomplishments; e.g., construct e-mail and other messages conveying congratulations, thank-you notes (R, W, L, S, V, Rp)

b. identify the formal and informal ways in which language and image are used appropriately to honour and/or recognize people and celebrate events; e.g., a toast, eulogy, poster and thank-you card (R, W, L, S, V, Rp)

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5.2 *Work within a group*

ELA 10-4	ELA 20-4	ELA 30-4

5.2.1 Cooperate with others and contribute to group processes

Students will:

a. set appropriate personal goals for participation in a group, e.g., demonstrate respect and be open to and supportive of the thoughts, opinions and contributions of others, and share personal knowledge, expertise and perspectives, as appropriate (L, S, V, Rp)

b. demonstrate respect for, and assess and defend, individual rights and differences in themselves and others, within a group or a community, in a positive and constructive manner; e.g., be fair and honest, demonstrate integrity and personal ethics (L, S, Rp)

c. interact and communicate with others in a positive manner, by considering appropriate dress, space and conversational skills; e.g., when in a job interview, when communicating with a customer or coworker (L, S, Rp)

d. participate effectively as a group member to facilitate the completion of group goals; e.g., generate ideas, access resources, contribute abilities and interests, monitor progress and share responsibility for completion (L, S, Rp)

d. assess the effectiveness of group contributions to facilitate the completion of group goals (L, S, Rp)

e. use an appropriate conflict-resolution model to identify and clarify the conflict, recognize different points of view, generate solutions, implement the best solution and assess the results (L, S, Rp)

e. assess the results and, based on new information, re-evaluate the conflict resolution model and solution (L, S, Rp)

f. demonstrate listening and other appropriate behaviours within a group; e.g., listen without interrupting, focus on the speaker, contribute to be heard, disagree courteously, accept conflicting opinions, show respect for the rights and values of others (L, S, Rp)

5.2.2 Understand and evaluate group processes

Students will:

a. recognize the various roles and responsibilities of group members, e.g., recorder, chair, Elder and coworker, and appreciate the contribution that these roles make to the group process (L, S)

b. identify and apply appropriate leadership styles to motivate a group; e.g., be cooperative and supportive and use appropriate problem-solving strategies (L, S, Rp)

c. engage in effective evaluations by realizing the importance of tact, honesty and specificity in peer and self-evaluation (R, W, L, S, V, Rp)

c. make effective use of peer and self-evaluation to enhance personal growth (R, W, L, S, V, Rp)

d. use appropriate criteria and teamwork tools to assess and monitor group processes; e.g., checklists, role descriptors, flow charts, discussion and questions (W, L, S)

e. demonstrate appropriate strategies to provide feedback that is a positive reflection of a presentation and/or encourages the presenter and audience to consider other ideas and additional information; e.g., I like it when you said …, you may want to consider … (W, S, Rp)

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KNOWLEDGE AND EMPLOYABILITY MATHEMATICS 10-4, 20-4

Policy: Knowledge and Employability courses provide students who meet the criteria with opportunities to experience success and become well prepared for employment, further studies, citizenship and lifelong learning (*Knowledge and Employability Courses Policy 1.4.2*).

VISION

Through Knowledge and Employability courses, students become active and responsible citizens, achieve their educational and career goals, improve quality of life for themselves and their families and positively impact their communities.

PHILOSOPHY AND RATIONALE

The development of the Knowledge and Employability courses was based on input received from consultations with education stakeholders throughout the province. The distinctive sequence of courses was designed to meet the educational needs of students who learn best:

- when focusing on the development and application of reading, writing and mathematical literacy,[1] and on essential employability skills
- through experiential learning activities
- when meaningful connections are made between schooling and personal experiences.

Knowledge and Employability courses assist students in:

- transitioning from school to the workplace and community
- preparing for responsible citizenship
- gaining recognition, respect and value from employers and further education providers.

Knowledge and Employability courses promote student skills, abilities and work ethics, including:

- academic and occupational skills of a standard determined by the workplace to be necessary for success
- practical applications through on- and off-campus experiences and/or community partnerships
- career development skills to explore careers, develop a career-focused portfolio and assess career skills
- interpersonal skills to ensure respect, support and cooperation with others.

1. Mathematical literacy: Selecting and applying appropriate mathematical operations, problem-solving strategies, tools and technology, and communicating using mathematical vocabulary in home, workplace and community experiences.

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Aboriginal Perspectives and Experiences
For historical, constitutional and social reasons, an understanding of First Nations, Métis and Inuit (FNMI) experiences and perspectives, and recognition that First Nations, Métis and Inuit students have particular needs and requirements, is necessary to enable all students to be respectful and responsible citizens.

Knowledge and Employability courses serve to facilitate positive experiences that will help Aboriginal students better see themselves in the curriculum and assist non-Aboriginal students to develop a better understanding of Alberta's First Nations, Métis and Inuit peoples.

GOALS OF KNOWLEDGE AND EMPLOYABILITY COURSES

Knowledge and Employability courses provide students with practical and applied opportunities to develop competencies necessary to meet or exceed the following goals. Knowledge and Employability courses prepare students to:

- earn a senior high school credential
- enter the workplace upon leaving school with employability and occupational skills that meet industry standards
- make successful transitions to other courses or to further education and training
- become responsible and contributing members of society.

CROSS-CURRICULAR, COMMUNITY AND WORKPLACE CONNECTIONS

Programs of study and resources for Knowledge and Employability courses are distinctive, in part, because they promote cross-curricular, community and workplace connections.

Cross-curricular Connections
Knowledge and Employability courses promote the integration of subjects to emphasize their interrelationships and connections to other school subjects. The philosophy of Knowledge and Employability courses is that students learn best when they can clearly recognize, in their course work, connections, applications and relevance to a variety of everyday experiences. Organizing for instruction may include thematic units, subject integration within units and/or projects in other subjects.

Community and Workplace Connections
Knowledge and Employability courses provide students with practical and applied opportunities to develop basic reading, writing and mathematical literacy. Community and workplace connections ensure learning within applied contexts, connecting the school with environments beyond school, and may include tours to local businesses and industries, mentorships, job shadowing and work experience.

Knowledge and Employability courses promote the development of career portfolios that help students connect their school experience to the world beyond school. Each portfolio will include exemplars of the student's on- and off-campus experiences and can be used when the student is seeking employment or further education/training opportunities. Items appropriate for inclusion in career portfolios include résumés, samples of written work, awards and/or their representations, teacher and self-evaluation checklists, workplace assessment tools and employer letters of recommendation.

SAFETY

Safety is emphasized and relevant information is incorporated throughout Knowledge and Employability courses, including basic safety rules and guidelines and information regarding the safe use of tools, equipment and materials in school, home, community and workplace settings.

TECHNOLOGY

Because technology is best learned within an applied context, Information and Communication Technology (ICT) outcomes, and the use of computers and other technologies, are included in Knowledge and Employability courses. This technology integration will help students make the transition to the world beyond school.

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ESSENTIAL UNIVERSAL SKILLS AND STRATEGIES

Knowledge and Employability courses emphasize the universal skills and strategies that are essential to all students, including the following:

- Interpersonal skills promote teamwork and respect for, support of and cooperation with others.
- Critical thinking promotes the analysis and appropriate applications of information.
- Creative thinking promotes the identification of unique connections among ideas and insightful approaches to questions and issues.
- Decision-making processes promote the making of timely and appropriate decisions.
- Problem-solving processes promote the ability to identify or pose problems and apply learning to consider the causes and dimensions of, and the solutions to, problems.
- Metacognition[2] enables students to become more aware of, and have greater control over, their own thinking and learning processes.

RELATIONSHIP TO OTHER COURSES

Each Knowledge and Employability course is consistent with the rationale, philosophy, program foundations and organization of other secondary courses. This consistency enables students, as appropriate, to progress through the Knowledge and Employability course sequence and/or to other secondary courses.

ENROLLMENT IN KNOWLEDGE AND EMPLOYABILITY COURSES

Students may take one or more courses in the sequence at any time during grades 8 through 12. Students may be enrolled in only Knowledge and Employability courses or in a combination of Knowledge and Employability and other secondary courses.

Information regarding the identification of students for enrollment in one or more courses can be accessed in the *Knowledge and Employability Courses Policy 1.4.2* and in the *Information Manual for Knowledge and Employability Courses, Grades 8–12*, 2006.

RATIONALE AND PHILOSOPHY OF KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Knowledge and Employability mathematics courses focus on developing essential mathematics knowledge, skills and attitudes needed for everyday living at home, in the workplace and in the community.

This sequence is designed for students whose needs, interests and abilities focus on basic mathematical understanding; e.g., literacy. Emphasis is on the acquisition of practical life skills and competency in using mathematics to solve everyday problems, interpret information and create new knowledge within the contexts of the home, the workplace and the community.

Mathematics competencies are developed through a problem-solving, experiential approach, using information and activities that directly relate to students' current and future experiences. A variety of activities and problems, along with community partnerships, help students understand and appreciate the role of mathematics in society. The use of manipulatives and other strategies/tools in Knowledge and Employability mathematics courses assists in addressing the diversity of learning styles and different developmental stages of individual students.

Knowledge and Employability mathematics courses emphasize career/life skills, teamwork, communication skills and thinking processes. Information and Communication Technology (ICT) outcomes, and the use of calculators, computers and other technologies, are integrated

2. Metacognition: Learning-to-learn strategies; awareness of processes and strategies one uses when learning.

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into the courses to help provide quick and accurate computation and manipulation and to enhance conceptual understanding.

Knowledge and Employability mathematics courses are derived from *The Common Curriculum Framework for K–12 Mathematics: Western Canadian Protocol for Collaboration in Basic Education* (1995) and *The Common Curriculum Framework for K–12 Mathematics Grade 10 to Grade 12: Western Canadian Protocol for Collaboration in Basic Education* (1996). Outcomes have been created and/or modified as needed.

These courses follow standards set out by the National Council of Teachers of Mathematics (NCTM).

GOALS OF KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Students will develop the following mathematics competencies in the context of solving everyday problems. Students will:

- identify the problem and select and apply appropriate problem-solving strategies, mathematical operations and tools
- estimate and calculate solutions accurately
- evaluate processes, results and personal/group performance
- develop teamwork skills and use appropriate vocabulary to reason and communicate mathematically
- apply mathematical literacy to everyday situations.

COMPONENTS OF KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Knowledge and Employability mathematics courses have similarities with, and linkages to, other mathematics courses. However, Knowledge and Employability mathematics courses and resources are distinctive in that they:

- provide students with practical and applied opportunities to develop mathematical competencies
- promote the integration of curriculum and community partnerships to connect mathematics to other school subjects and to other environments.

CONCEPTUAL FRAMEWORK FOR KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Within the context and nature of mathematics, the courses include the development of mathematical processes to assist students in achieving their learning goals and to encourage lifelong learning in mathematics.

The conceptual framework outlined in this section presents:

- a multifaceted view of mathematics
- the discipline as a set of interwoven skills, procedures and concepts.

The following graphic illustrates how student outcomes are organized by strand and are designed to be influenced by mathematical processes and the nature of mathematics.

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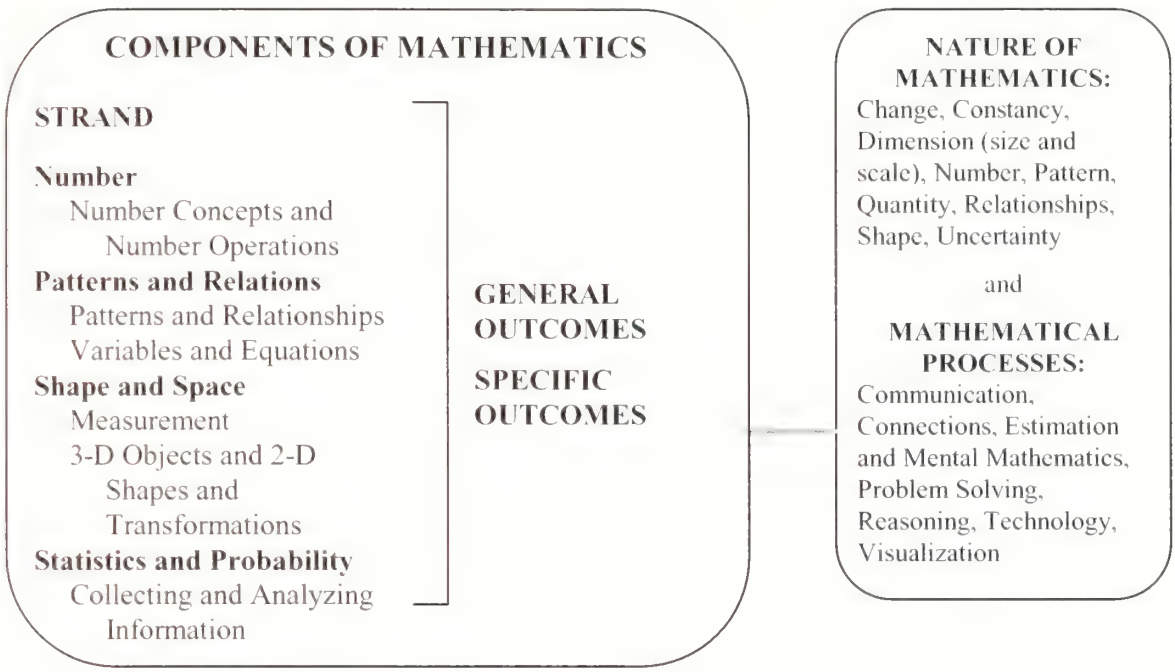
KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Students use a problem-solving approach to complete calculations and solve word problems in everyday home, workplace and community contexts.



MATHEMATICAL PROCESSES

There are critical components that students must encounter in a mathematics program in order to achieve the goals of mathematics education and to embrace lifelong learning in mathematics. Students in Knowledge and Employability mathematics courses will build on and apply mathematical processes, using everyday home, workplace and community problems.

This program of studies incorporates the following seven interrelated mathematical processes that are intended to permeate teaching and learning.

Communication [C]
Students need opportunities to read about, represent, view, write about, listen to and discuss mathematical ideas in everyday and workplace contexts. These opportunities allow students to create links between their own language and ideas and the formal language and symbols of mathematics.

Communication is important in clarifying, reinforcing and modifying ideas, attitudes and beliefs about mathematics. Students should be encouraged to use a variety of forms of communication while learning mathematics. Students also need to communicate their learning using mathematical terminology.

Communication can help students make connections among concrete, pictorial, symbolic, verbal, written and mental representations of mathematical ideas.

Connections [CN]
Contextualization and making connections to experience are powerful processes in developing mathematical understanding. When mathematical ideas are connected to each other through concrete, pictorial, symbolic, verbal, written and mental representations, or through real-world contexts, students can begin to view mathematics as useful, relevant and integrated.

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Learning mathematics within contexts and making relevant connections can validate past experiences and increase student willingness to participate and be actively engaged.

The brain is constantly looking for and making connections. "Because the learner is constantly searching for connections on many levels, educators need to orchestrate the experiences from which learners extract understanding.... Brain research establishes and confirms that multiple, complex and concrete experiences are essential for meaningful learning and teaching."[3]

Estimation and Mental Mathematics [E]
Students need to know the how and when, and what strategy to use, when estimating. Estimation is a strategy for determining approximate values or quantities, usually by referring to benchmarks, or for determining the reasonableness of calculated values. Estimation is used to make mathematical judgements and develop useful, efficient strategies for dealing with situations in daily life.

Mental mathematics is a combination of cognitive strategies that enhances flexible thinking and number sense and enables students to determine answers without paper and pencil. It improves computational fluency by developing efficiency, accuracy and flexibility. Mental mathematics "is the cornerstone for estimation and leads to better understanding of number concepts and number operations."[4]

Problem Solving [PS]
Learning through problem solving should be the focus of mathematics at all grade levels. When students encounter new situations and respond to questions like "*How would you ...?*" or "*How could you ...?*", the problem-solving approach is being modelled. A true understanding of mathematical concepts and procedures is developed when the problems are solved in meaningful contexts and when students develop their own problem-solving strategies by being open to listening, discussing and trying alternatives.

Problem solving is a powerful teaching tool that fosters multiple, creative and innovative solutions. Creating an environment where students openly engage in finding a variety of strategies for solving problems empowers students to explore alternatives and develops confident, cognitive mathematical risk takers.

Reasoning [R]
Students need to develop confidence in their ability to reason and justify their thinking within and outside of mathematics. Mathematical reasoning helps students think logically and make sense of mathematics.

Mathematical experiences in and out of the classroom provide opportunities for inductive and deductive reasoning. Inductive reasoning occurs when students explore and record results, analyze observations, make generalizations from patterns and test these generalizations. Deductive reasoning occurs when students reach new conclusions based on what is already known or assumed to be true.

Technology [T]
Technology contributes to the learning of a wide range of mathematical outcomes and enables students to explore and create patterns, examine relationships, test assumptions and solve problems.

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3. Renate Numella Caine and Geoffrey Caine, *Making Connections: Teaching and the Human Brain* (Menlo Park, CA: Addison-Wesley Publishing Company, 1991), p. 5.

4. Jack A. Hope et al., *Mental Math in the Primary Grades* (Palo Alto, CA: Dale Seymour Publications, 1988), pp. 161–173.

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Calculators and computers can be used to:

- explore and demonstrate mathematical relationships and patterns
- organize and display data
- assist with calculation procedures as part of problem solving
- decrease the time spent on computations when other mathematical learning is the focus
- reinforce the learning of basic facts and test properties
- develop personal procedures for mathematical operations
- create geometric displays
- simulate situations
- develop number sense.

Visualization [V]

Visualization "involves thinking in pictures and images, and the ability to perceive, transform and recreate different aspects of the visual-spatial world."[5] The use of visualization in the study of mathematics provides students with opportunities to understand mathematical concepts and make connections among them.

Visualization is fostered through the use of concrete materials, technology and a variety of visual representations.

NATURE OF MATHEMATICS

Knowledge and Employability mathematics courses focus on making connections between the components of mathematics and everyday home, workplace and community applications.

Change

To make predictions, students need to describe and quantify their observations, attempt to build patterns and identify those quantities that remain fixed and those that change.

Constancy

Students are expected to communicate ideas visually, using diagrams and spoken and written forms, when describing constancy. The most important properties in mathematics and science relate to those properties that do not change when outside conditions do.

Stability, conservation, equilibrium, steady state and symmetry are terms used to describe constancy.

Students need to be aware of the properties that remain fixed so that they can solve problems involving constants; e.g., rates of change, lines with constant slope, direct variation situations or the angle sums of triangles.

Dimension (size and scale)

The concept of dimension is generally associated with 3-D objects, 2-D shapes or 1-D lines and needs to be developed within an environment of physical objects.

Physical objects can also be described using measurement concepts and pattern recognition, rather than the memorization of formulas.

Number

Number, number systems and number operations are vital to all mathematics learning. The use of number must include number sense. Number sense includes:

- an intuitive feeling about numbers and their multiple relationships
- the construction of the meaning of number through a variety of experiences
- the development of an appreciation of the need for numbers beyond whole numbers
- an appreciation of, and the ability to make, quick and accurate estimations for computation and measurement
- the ability to detect arithmetic errors
- knowledge of place value and the effects of arithmetic operations.

5. Thomas Armstrong, *Seven Kinds of Smart: Identifying and Developing Your Many Intelligences* (New York, NY: NAL-Dutton, 1993), p. 10.

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Number sense includes the recognition of number patterns that can be used to count, make predictions, describe shapes and make comparisons.

Pattern

"Mathematics is an exploratory science that seeks to understand every kind of pattern."[6]

Patterns exist in numbers, geometry, algebra and data. Mathematics becomes a useful tool to assist students in their systematic and intellectual understanding of their environment by helping them recognize, extend, create and use patterns as a routine aspect of their lives.

Quantity

In everyday situations, individuals classify, measure and order. Some outcomes in this program of studies, therefore, address single numbers, numbers attached to units of measure and ordered sets of numbers. Other outcomes address the interpretation of numbers and number systems.

With the growing use of technology to process numerical information, it is essential for students to have a wide range of estimation skills to evaluate whether the numerical output provided by a calculator or a computer is a reasonable solution to a given problem.

Relationships

The study of mathematics is the development of relationships between and among things. Students should look for relationships among physical things and the data used to describe those things. Descriptions of the attributes of objects are used to examine symmetry and congruence and to classify things. Relationships will be described visually, symbolically, orally and in written form.

Shape

Shape in mathematics is central to geometry but also includes:

- geometric representations of algebraic relations
- the geometry of maps
- the creation of networks of plane figures that can be used to construct 3-D objects.

It is very important for students to look for and use similarities, congruences, patterns, transformations, dilatations and tessellations in the solution of a range of everyday problems.

The use of language to describe shapes is an important aspect of mathematics and allows for the classification of objects according to various attributes and for the naming and analysis of objects.

Uncertainty

Uncertainty involves data, chance, measurements and errors. Problems dealing with data, together with numbers found in various contexts, can be solved within the school mathematics program as long as the data provided and the problems posed have some meaning and relevance to students.

Chance deals with the predictable and the unpredictable outcomes of events. From an early age, students are expected to deal with the concept of chance. As they mature, they use language to describe chance that is more sophisticated and that involves the vocabulary of probability theory.

6. Lynn Arthur Steen, ed., *On the Shoulders of Giants, New Approaches to Numeracy* (Washington, DC: National Academy Press, 1990), p. 8.

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PROBLEM-SOLVING FRAMEWORK FOR KNOWLEDGE AND EMPLOYABILITY MATHEMATICS

Understand the Problem

- ask questions
- sort and classify information
- look for patterns
- interpret pictures, charts, tables and graphs
- identify key words
- simplify questions
- identify important and unimportant information

Teamwork

- work independently or as a member of a group
- demonstrate teamwork skills; e.g., listen, accept the ideas of others, evaluate personal performance, analyze group interactions

Think of a Plan

- develop an action plan
- identify the appropriate materials and tools for implementing the action plan
- draw a picture, use symbols or use manipulatives
- predict/estimate solutions to the problem

Look Back

- check solutions for reasonableness and accuracy, using strategies; e.g., opposite operations, estimation, pencil and paper, a calculator, a computer
- evaluate choices and the process in problem solving, then redefine the action plan as appropriate
- examine the application of a concept/strategy in other subject areas, the home or the workplace
- evaluate the appropriateness of technology and other tools used to investigate and solve the problem

Carry Out the Plan

- use data gathered from a variety of electronic and other sources to solve the problem
- solve the problem, using pencil and paper, manipulatives, symbols, a calculator, a computer or other tool/strategy
- state solutions to the problem in a conclusion sentence
- describe and/or demonstrate solutions, e.g., in a journal or computer presentation, using manipulatives or symbols
- apply communication strategies, e.g., sharing ideas clearly, using appropriate listening and representing skills

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Strand: Number (Number Concepts and Number Operations)

Students will:

- estimate and solve problems involving numbers, money, decimals, percents, fractions, ratios and proportion in everyday home, workplace and community contexts, using technology as appropriate
- develop and demonstrate number sense to describe quantities, represent numbers in multiple ways and apply appropriate arithmetic operations
- assess the reasonableness of calculations and problem-solving strategies
- communicate mathematically and investigate the application of number concepts and operations in a variety of career and workplace situations, working individually or as members of a team.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* develop and demonstrate a number sense for whole numbers, common fractions, decimals, percents and integers and apply arithmetic operations to solve everyday problems.	**General Outcome** *Students will:* solve everyday home, community and workplace problems by applying arithmetic operations to whole numbers, decimals, common fractions, percents and integers.
Specific Outcomes *Students will:* 1. use estimation strategies to estimate and round numbers to the nearest unit, tenth and hundredth to solve problems in everyday contexts [E, PS, R] 2. represent and describe the relationships between proper/improper fractions, equivalent fractions and mixed numbers concretely, pictorially and symbolically [C, CN, R, V] 3. convert among fractions, decimals and percents concretely, pictorially and symbolically to facilitate the solving of problems [C, CN, R, V] 4. represent and explain the meaning of integers in everyday contexts concretely, pictorially and symbolically [C, CN, R, V] 5. estimate and apply arithmetic operations to solve everyday problems involving: • whole numbers • decimals • fractions • mixed numbers • percents [CN, E, PS]	**Specific Outcomes** *Students will:* 1. use estimation strategies to estimate and apply arithmetic operations to solve everyday problems involving: • whole numbers • integers (add/subtract only) • decimals • fractions • mixed numbers • percents [CN, E, PS, R] 2. estimate and round numbers and decimals, e.g., money, to the nearest unit, tenth and hundredth to solve problems in everyday contexts [E, PS, R] 3. assess the reasonableness of applied calculations and problem-solving strategies, using a variety of tools and/or strategies; e.g., estimation, charts, graphs, calculators and/or computers [E, R, T, V] 4. identify and use appropriate tools, e.g., tables, charts, spreadsheets and calculators, to increase accuracy in everyday and/or work-related problem-solving situations [CN, PS, R, T]

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Mathematics 10-4	Mathematics 20-4
Specific Outcomes (continued) *Students will:* 6. estimate, add and subtract integers concretely, pictorially and symbolically in everyday contexts [CN, E, PS] 7. assess the reasonableness of applied calculations and problem-solving strategies, using a variety of tools and/or strategies; e.g., estimation, charts, graphs, calculators and/or computers [E, R, T, V] 8. calculate and compare rates and unit prices by writing ratios that involve numbers with different units [CN, PS, R] 9. determine the value of a power, using a whole number base with exponents of 2 and 3 [CN, R, V] 10. recognize and explain numbers in scientific notation form [C, CN, R, V]	**Specific Outcomes** (continued) *Students will:* 5. create, use and modify a spreadsheet template for a variety of everyday contexts, including the determination of interest rates, vehicle payments, investments or budgets [CN, PS, R, T] 6. use a variety of methods and tools to convert fractional percents to decimal forms [CN, PS, R] 7. express rates and ratios in equivalent forms to solve problems in everyday contexts [PS, R, T] 8. estimate unit costs and compare costs of everyday purchases [CN, E, PS, R]

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Strand: Patterns and Relations (Patterns and Relationships)
Students will:

- recognize that patterns and relationships exist in nature and everyday living
- use patterns and relationships to develop a better understanding of their environments and to solve everyday problems at home, in the workplace and in the community, using technology as appropriate
- assess the reasonableness of calculations and problem-solving strategies
- communicate mathematically and investigate the application of patterns and relationships in a variety of career and workplace situations, working individually or as members of a team.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace.	**General Outcome** *Students will:* express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace.
Specific Outcomes *Students will:* 1. identify, describe and draw conclusions, in oral and written form, about patterns and relationships in nature and everyday contexts [C, CN, R, V] 2. create expressions, make predictions and develop rules to describe, complete and extend patterns and relationships in everyday contexts [C, CN, PS, R] 3. distinguish between the use of variables and constants in everyday situations [CN, R] 4. graph relationships, using everyday home, community and workplace contexts, and draw conclusions, using patterns and relationships [CN, R, V]	**Specific Outcomes** *Students will:* 1. use relationships and patterns to summarize, generalize and predict when solving problems and making decisions in everyday and work-related contexts [CN, PS, R] 2. generalize patterns arising from everyday problem-solving contexts, using mathematical expressions and equations and/or verifying by substitution [CN, PS, R]

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Strand: Patterns and Relations (Variables and Equations)

Students will:

- represent algebraic expressions in multiple ways to solve problems, using technology as appropriate
- communicate mathematically and investigate the application of variables and equations in a variety of career and workplace situations, working individually or as members of a team.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* use variables and equations to express, summarize and apply relationships as problem-solving tools in a restricted range of contexts.	**General Outcome** *Students will:* use variables and equations to express, summarize and apply relationships as problem-solving tools in a restricted range of contexts.
Specific Outcomes *Students will:* 5. use variables, formulas and/or substitutions to solve problems in practical situations [CN, PS, R] 6. substitute numbers for variables in expressions and graph and examine the relationship [C, PS, R, V]	**Specific Outcomes** *Students will:* 3. interpret formulas related to practical situations and solve everyday problems by using common arithmetic expressions and relationships; e.g., perimeter and area [CN, PS, R, V]

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Strand: Shape and Space (Measurement)

Students will:

- estimate and take accurate measurements using everyday metric (SI) and imperial units of measure
- solve problems, using appropriate measuring devices (i.e., metric [SI] and by imperial), strategies and technology in home, workplace and community contexts
- communicate mathematically and investigate the application of measurement knowledge and skills in a variety of career and workplace situations, working individually or as members of a team
- assess the reasonableness of calculations and problem-solving strategies.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems.	**General Outcome** *Students will:* estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems.
Specific Outcomes *Students will:* 1. select and use appropriate metric (SI) and imperial measuring devices and units to take measurements in home and work-related contexts, including: • length • mass (weight) • volume (capacity) [CN, PS, R, T] 2. measure within acceptable degrees of accuracy [CN, R] 3. compare, convert and apply metric (SI) and imperial units of measure, as appropriate in everyday contexts [CN, R, T] 4. solve problems involving perimeter, area, mass (weight) and volume (capacity) [CN, PS, R, T] 5. use conversion charts, calculators and/or other tools to compare and convert common metric (SI) and imperial units of measure, as required in everyday contexts [CN, PS, R, T] 6. estimate the measurements of angles in a diagram and in various environments [E]	**Specific Outcomes** *Students will:* 1. use appropriate metric (SI) and imperial measuring strategies, tools and units to measure: • length • volume (capacity) • mass (weight) • angles • time • temperature 2. measure within acceptable degrees of accuracy, as required in everyday and work-related situations [CN, PS, R, T] 3. calculate elapsed time in everyday contexts [CN, R] 4. use conversion charts, calculators and/or other tools to compare and convert common metric (SI) and imperial units of measure, as required in everyday contexts [R, T] 5. investigate the types and uses of measuring tools and units within the community and workplace [C, V]

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Mathematics 10-4	Mathematics 20-4
Specific Outcomes (continued) *Students will:* 7. measure and draw angles, using a straightedge, protractor and other technology [CN, R] 8. estimate, measure and calculate the area of a circle [E, PS] 9. calculate the unknown when given the circumference, diameter and/or radius of a circle to solve everyday problems [PS, T] 10. estimate and calculate the area of a circle to solve problems in everyday contexts [E, PS] 11. estimate and apply a variety of arithmetic operations, using hours and minutes, in everyday applications [CN, E, PS, T] 12. estimate and measure temperature and calculate changes in temperature [E, PS]	

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Strand: Shape and Space (3-D Objects and 2-D Shapes and Transformations)
Students will:

- create, examine and manipulate 3-D objects and 2-D shapes, using transformations and technology, and other tools as appropriate, to better understand shapes and objects at home, in the workplace and in the community
- communicate mathematically and investigate the application of shape and space in a variety of career and workplace situations, working individually or as members of a team.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence, symmetry, translation, rotation and reflection.	**General Outcome** *Students will:* extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence, symmetry, translation, rotation and reflection.
Specific Outcomes *Students will:* 13. measure and classify pairs of angles as either complementary or supplementary [CN, E, R] 14. represent, examine and describe enlargements and reductions [CN, R] 15. interpret scale models and identify the geometric properties associated with figures and shapes used in representations [CN, R, T] 16. reproduce drawings or objects to scale, using a variety of strategies; e.g., grid paper, dot paper and/or computer software [CN, R, T] 17. draw designs, using ordered pairs in all four quadrants of a coordinate grid, with translation and reflection images [PS, V]	**Specific Outcomes** *Students will:* 6. read and interpret scale drawings and models in workplace and community situations [C, R, T] 7. use scale diagrams, including enlargements and reductions, to solve construction, renovation and other related problems [CN, PS, R, T] 8. give oral and written directions, applying appropriate communication skills [C, R] 9. read and interpret maps to locate specific sites, determine distances, give directions or use public transportation [C, CN, R, V]

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Strand: Statistics and Probability (Collecting and Analyzing Information)

Students will:

- collect, generate, interpret, examine and maintain data, charts, graphs and other records for personal use at home, in the workplace and in the community, using technology as appropriate
- use probability, chance and predictions when planning and making everyday decisions
- assess the reasonableness of calculations and problem-solving strategies
- communicate mathematically and investigate, collect and examine information in a variety of career and workplace situations, working individually or as members of a team.

C Communication
CN Connections
E Estimation and Mental Mathematics
PS Problem Solving
R Reasoning
T Technology
V Visualization

Mathematics 10-4	Mathematics 20-4
General Outcome *Students will:* develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required.	**General Outcome** *Students will:* develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required.
Specific Outcomes *Students will:* 1. predict, interpret, make comparisons and communicate information from graphs, tables, charts and other sources at home and in the workplace [CN, R] 2. recognize the uses of data and data collection and display tools in everyday and work-related situations [CN, R] 3. record information and organize files and directories, using computers and/or other tools [CN, PS, R, T] 4. examine a plan for collecting and processing information and modify it as appropriate for everyday situations [CN, PS, R]	**Specific Outcomes** *Students will:* 1. use information and data from a variety of sources to make comparisons, predictions, inferences, conclusions and/or decisions in everyday situations [CN, E, PS, R] 2. record and organize information and data as appropriate in everyday and work-related situations [CN, R] 3. use probability and statistics to predict upcoming events and to make decisions in everyday life [CN, E, R]

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KNOWLEDGE AND EMPLOYABILITY SCIENCE 10-4, 20-4

Policy: Knowledge and Employability courses provide students who meet the criteria with opportunities to experience success and become well prepared for employment, further studies, citizenship and lifelong learning (*Knowledge and Employability Courses Policy 1.4.2*).

VISION

Through Knowledge and Employability courses, students become active and responsible citizens, achieve their educational and career goals, improve quality of life for themselves and their families and positively impact their communities.

PHILOSOPHY AND RATIONALE

The development of the Knowledge and Employability courses was based on input received from consultations with education stakeholders throughout the province. The distinctive sequence of courses was designed to meet the educational needs of students who learn best:

- when focusing on the development and application of reading, writing and mathematical literacy,[1] and on essential employability skills
- through experiential learning activities
- when meaningful connections are made between schooling and personal experiences.

Knowledge and Employability courses assist students in:

- transitioning from school to the workplace and community
- preparing for responsible citizenship
- gaining recognition, respect and value from employers and further education providers.

Knowledge and Employability courses promote student skills, abilities and work ethics, including:

- academic and occupational skills of a standard determined by the workplace to be necessary for success
- practical applications through on- and off-campus experiences and/or community partnerships
- career development skills to explore careers, develop a career-focused portfolio and assess career skills
- interpersonal skills to ensure respect, support and cooperation with others.

1. Mathematical literacy: Selecting and applying appropriate mathematical operations, problem-solving strategies, tools and technology, and communicating using mathematical vocabulary in home, workplace and community experiences.

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Aboriginal Perspectives and Experiences
For historical, constitutional and social reasons, an understanding of First Nations, Métis and Inuit (FNMI) experiences and perspectives, and recognition that First Nations, Métis and Inuit students have particular needs and requirements, is necessary to enable all students to be respectful and responsible citizens.

Knowledge and Employability courses serve to facilitate positive experiences that will help Aboriginal students better see themselves in the curriculum and assist non-Aboriginal students to develop a better understanding of Alberta's First Nations, Métis and Inuit peoples.

GOALS OF KNOWLEDGE AND EMPLOYABILITY COURSES

Knowledge and Employability courses provide students with practical and applied opportunities to develop competencies necessary to meet or exceed the following goals. Knowledge and Employability courses prepare students to:

- earn a senior high school credential
- enter the workplace upon leaving school with employability and occupational skills that meet industry standards
- make successful transitions to other courses or to further education and training
- become responsible and contributing members of society.

CROSS-CURRICULAR, COMMUNITY AND WORKPLACE CONNECTIONS

Programs of study and resources for Knowledge and Employability courses are distinctive, in part, because they promote cross-curricular, community and workplace connections.

Cross-curricular Connections
Knowledge and Employability courses promote the integration of subjects to emphasize their interrelationships and connections to other school subjects. The philosophy of Knowledge and Employability courses is that students learn best when they can clearly recognize, in their course work, connections, applications and relevance to a variety of everyday experiences. Organizing for instruction may include thematic units, subject integration within units and/or projects in other subjects.

Community and Workplace Connections
Knowledge and Employability courses provide students with practical and applied opportunities to develop basic reading, writing and mathematical literacy. Community and workplace connections ensure learning within applied contexts, connecting the school with environments beyond school, and may include tours to local businesses and industries, mentorships, job shadowing and work experience.

Knowledge and Employability courses promote the development of career portfolios that help students connect their school experience to the world beyond school. Each portfolio will include exemplars of the student's on- and off-campus experiences and can be used when the student is seeking employment or further education/training opportunities. Items appropriate for inclusion in career portfolios include résumés, samples of written work, awards and/or their representations, teacher and self-evaluation checklists, workplace assessment tools and employer letters of recommendation.

SAFETY

Safety is emphasized and relevant information is incorporated throughout Knowledge and Employability courses, including basic safety rules and guidelines and information regarding the safe use of tools, equipment and materials in school, home, community and workplace settings.

TECHNOLOGY

The Information and Communication Technology (ICT) curriculum is infused throughout the Knowledge and Employability courses, including the use of computers and other technology, to support the instruction of technology within an applied context.

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ESSENTIAL UNIVERSAL SKILLS AND STRATEGIES

Knowledge and Employability courses emphasize the universal skills and strategies that are essential to all students, including the following:

- Interpersonal skills promote teamwork and respect for, support of and cooperation with others.
- Critical thinking promotes the analysis and appropriate applications of information.
- Creative thinking promotes the identification of unique connections among ideas and insightful approaches to questions and issues.
- Decision-making processes promote the making of timely and appropriate decisions.
- Problem-solving processes promote the ability to identify or pose problems and apply learning to consider the causes and dimensions of, and the solutions to, problems.
- Metacognition[2] enables students to become more aware of, and have greater control over, their own thinking and learning processes.

RELATIONSHIP TO OTHER COURSES

Each Knowledge and Employability course is consistent with the rationale, philosophy, program foundations and organization of other secondary courses. This consistency enables students, as appropriate, to progress through the Knowledge and Employability course sequence and/or to other secondary courses.

ENROLLMENT IN KNOWLEDGE AND EMPLOYABILITY COURSES

Students may take one or more courses in the sequence at any time during grades 8 through 12. Students may be enrolled in only Knowledge and Employability courses or in a combination of Knowledge and Employability and other secondary courses.

Information regarding the identification of students for enrollment in one or more courses can be accessed in the *Knowledge and Employability Courses Policy 1.4.2* and in the *Information Manual for Knowledge and Employability Courses, Grades 8–12*, 2006.

RATIONALE AND PHILOSOPHY OF KNOWLEDGE AND EMPLOYABILITY SCIENCE

Knowledge and Employability science courses focus on developing and applying essential science skills, knowledge and attitudes needed for everyday living at home, in the workplace and in the community. Science competencies are developed through the investigation of science-related problems, questions and issues and through everyday applications that help students understand and appreciate the role of science in society.

Knowledge and Employability science courses emphasize career and life skills, teamwork, communication skills and thinking processes. Each grade level is developed within a scientific-inquiry framework, emphasizing problem-solving and decision-making skills based on students' abilities and everyday applications.

Diverse learning experiences within science courses provide students with opportunities to explore, examine and appreciate the interrelationships among science, technology, society and the environment. These learning experiences also develop understandings that will affect the lives of students at home, in the workplace and in the community.

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2. Metacognition: Learning-to-learn strategies; awareness of processes and strategies one uses when learning.

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SCIENCE FOUNDATIONS

Knowledge and Employability science courses promote the development of the four foundations of science.

Foundation 1: Science, Technology and Society (STS)
Students will explore their everyday home, workplace and community environments, gather information, develop ideas and use technology and other tools to make decisions about their personal lives. Students will recognize the influence of science on decision making by individuals, communities and society.

Foundation 2: Knowledge
Students will investigate theories, models, concepts, processes and principles in life science, physical science and Earth and space science, with an emphasis on application to everyday living.

Foundation 3: Skills
Students will develop skills in scientific communication and teamwork, initiating and planning, performing and recording, and analyzing and interpreting to answer questions, solve problems and make decisions in their everyday lives.

Foundation 4: Attitudes
Knowledge and Employability science courses emphasize the development of positive attitudes and behaviours related to collaboration, mutual respect, safety and stewardship in everyday living.

GOALS

The principal goal of the Knowledge and Employability science courses is to develop science competencies to assist students becoming contributing members of society and independent and lifelong learners. These competencies include:

- communication and teamwork skills for use in collaborative group work
- attitudes that enable the responsible use of knowledge and skills
- the selection and application of appropriate science skills, tools and strategies to understand and interpret the world
- the exploration of interests and ideas, using appropriate problem-solving and decision-making strategies
- the application of science understandings, skills and attitudes to everyday life/work situations.

UNITS OF STUDY

When science components are organized into appropriate contexts, students can use their knowledge to solve problems and make decisions in relation to their everyday experiences.

The units of study provide the contexts within which the skills, attitudes, knowledge and science, technology and society (STS) outcomes are developed, based on students' abilities and everyday living at home, in the workplace and in the community.

Each unit of study has focusing questions to provide direction for inquiry. Specific outcomes include key concepts.

Examples
Many of the outcomes are supported by examples. The examples **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed. Illustrative examples are written in *italics* and are separated from the outcomes by being placed in parentheses.

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KNOWLEDGE AND EMPLOYABILITY SCIENCE

Knowledge and Employability science provides basic science literacy. The courses promote awareness, understanding and the development and application of science skills, knowledge and attitudes for successful living at home, in the workplace and in the community.

Skills

- Initiate and Plan
- Perform and Record
- Analyze and Interpret
- Communicate and Develop Teamwork

Attitudes

- Interest in Science
- Mutual Respect
- Scientific Inquiry
- Collaboration
- Stewardship
- Safety

Knowledge/Science, Technology and Society (STS)

- Nature of Science
- Science and Technology
- Social and Environmental Contexts of Science and Technology

Units of Study: Contexts for Developing Knowledge, Skills and Attitudes

Grade 8

Mix and Flow of Matter
Cells and Systems
Light and Optical Systems
Mechanical Systems
Freshwater and Saltwater Systems

Grade 9

Biological Diversity
Matter and Chemical Change
Environmental Chemistry
Electrical Principles and Technologies
Space Exploration

Science 10-4

Investigating Properties of Matter
Understanding Energy Transfer Technologies
Investigating Matter and Energy in Living Systems
Investigating Matter and Energy in Environmental Systems

Science 20-4

Applications of Matter and Chemical Change
Understanding Common Energy Conversion Systems
Disease Defence and Human Health
Motion, Change and Transportation Safety

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Unit A: Investigating Properties of Matter (Nature of Science Emphasis)

Overview

Handling chemicals safely, whether at home or in the workplace, requires an understanding of the properties of pure substances and mixtures. Students actively investigate the properties of a variety of matter, including mixtures and solutions and elements and compounds encountered in everyday life. The atom as the basic building block of matter is introduced. Students also investigate the classification of elements on the periodic table.

Focusing Questions

1. How do we use properties to classify matter?
2. How can an understanding of matter be used in the home, community and workplace?
3. What safety standards exist for the use, storage and transportation of chemicals, and how are these standards applied at home, in the community and in the workplace?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- safe handling, storage and disposal of household materials
- Workplace Hazardous Materials Information System (WHMIS) and Hazardous Household Product Symbols (HHPS)
- solutions and solubility of household substances
- dilution and concentration
- preparing solutions
- separating mixtures
- acids and bases
- the periodic table: metals, nonmetals and metalloids
- elements and compounds
- corrosion and rusting

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. classify various forms of matter, including commonly used household substances, on the basis of their properties and relate these properties to safe use, storage and disposal
   - communicate and demonstrate safe handling, storage and disposal of household and workplace substances, using the Workplace Hazardous Materials Information System (WHMIS) and Hazardous Household Product Symbols (HHPS)
   - compare and contrast the properties of pure substances and mixtures *(e.g., zinc and brass, iron and stainless steel, acetic acid and vinegar, pure water and salt water)*
   - relate the properties of pure substances and mixtures to practical applications *(e.g., salting icy roads, adding antifreeze to automobile radiators)*
   - differentiate between the physical and chemical properties of matter
   - apply the particle model of matter to explain the physical properties of the phases of matter

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2. describe solutions and solubility, solutes and solvents and describe how these concepts are applied to the production of prepared foods and useful materials
   - define solute, solvent, solution and solubility
   - provide examples of mixtures that form homogeneous solutions *(e.g., vinegar and water)*
   - provide examples of mixtures that do not form homogeneous solutions *(e.g., oil and water)*
   - describe examples of the effect of temperature change on solubility and explain this effect on the basis of the particle model of matter *(e.g., concentration of brines for pickling and syrups for canning)*
   - compare the volume of packaging waste resulting from the use of concentrated and diluted forms of products *(e.g., orange juice, fabric softener)* and relate this to the need for recycling and environmental preservation
   - describe, in general terms, the pH scale as an indicator of acidity or basicity *(e.g., a pH of less than 7 indicates an acid, a pH of greater than 7 indicates a base)*
   - investigate the corrosive effects of environmental factors such as acids, bases, salts, humidity and temperature *(e.g., corrosion of iron by acid rain and spray from ocean water)*
   - identify the potential dangers of mixing common household and industrial chemicals *(e.g., not mixing ammonia cleaners with bleach, not adding water when diluting acid)*

3. describe the properties of elements and compounds and have a basic understanding of the periodic table
   - identify that elements can combine to form compounds and that compounds break down into their constituent elements
   - describe the difference among metals, nonmetals and metalloids on the basis of their properties *(e.g., luster, conductivity, malleability, brittleness, state of matter)*
   - use the periodic table to locate the names and properties of elements
   - identify and write word equations for common elements and simple compounds *(e.g., hydrogen and oxygen produce water, iron and oxygen produce rust, carbon and oxygen produce carbon dioxide, sodium and chlorine produce salt).*

Skill Outcomes

Initiating and Planning

Students will:

ask questions about the relationships among observable variables and conduct investigations to address those questions

- answer questions about science-related problems
- state a prediction and a hypothesis based on background information or on an observed pattern of behaviour
- identify the major variables related to an investigation/experiment
- carry out investigations/experiments
- use appropriate methods and tools to collect data and information *(e.g., separate a mixture, using standard techniques such as filtration and evaporation).*

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Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- perform experiments and/or conduct investigations *(e.g., investigate properties such as physical appearance, density, solubility, magnetism and melting point of sample materials in the laboratory)*
- organize data, using a format that is appropriate to the task or experiment *(e.g., prepare a chart that describes the properties of common household solutions and lists procedures for their safe use, storage and disposal)*
- select information from various print and electronic sources or from several parts of the same source *(e.g., use current, reliable information sources to investigate elements and compounds; upload and download text, image, audio and video files on the safe handling of chemicals in the workplace).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- examine patterns and trends in data and give possible explanations
- state a possible conclusion based on experimental data and explain how the evidence gathered supports or refutes the initial prediction.

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- receive, understand and act on the ideas of others *(e.g., share information and learn from others)*
- communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means *(e.g., write, in point form, how chemicals are used in the laboratory, in the home and in the workplace).*

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., research answers to questions such as, "What is the pH of shampoo and other cleaning solvents used around the home?")*
Mutual Respect	• appreciate that scientific understating evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., recognize the contribution of science and technology to the progress of civilizations)*

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Scientific Inquiry	• apply a variety of strategies to investigate questions, problems and issues and apply scientific methods to carefully gather evidence when investigating problems and issues *(e.g., ask questions to ensure personal understanding)*
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., work collaboratively with any classmate or group and share responsibility for any errors made or any difficulties encountered)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., evaluate the long-term impact of waste disposal, such as paints and cleaning solutions, on the environment and the quality of life of living organisms)*
Safety	• show concern for safety when planning, conducting and reviewing activities *(e.g., read the label on materials before using them, interpret the WHMIS symbols and consult a reference document if safety symbols are not understood; seek medical assistance immediately for any first-aid concerns, such as cuts, burns or unusual reactions).*

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Unit B: Understanding Energy Transfer Technologies (Science and Technology Emphasis)

Overview

Energy can be transferred by heat and by the use of force or distance multipliers called machines. The optimal design of such technologies is based upon an understanding of energy transfer, heat, temperature and force. Students understand that the design of energy transfer technologies takes into consideration the need for safety and for efficiency as a means of reducing reliance upon nonrenewable energy resources.

Focusing Questions

1. How do common energy transfer technologies work in meeting our daily needs?
2. Why are efforts to promote energy conservation, by improving the efficiency of these technologies, important to society?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- cooling and heating systems based on radiation, convection, conduction
- particle model of matter, temperature, thermal energy and heat
- methods that reduce the loss of heat from buildings, our bodies and constructed devices
- absorption and loss of heat
- protection against thermal energy transfer
- energy transfer
- reducing reliance on nonrenewable energy sources

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. examine how natural and technological cooling and heating systems are based on the transfer of thermal energy (heat) from hot to cold objects
   - observe cooling systems as applications that are based on the principle that heat transfers from warmer to cooler objects *(e.g., air conditioners, automobile radiators)*
   - describe the three ways that thermal energy transfers from warmer to cooler objects; i.e., radiation, convection and conduction
   - compare and evaluate the efficiency of contemporary structures to traditional Aboriginal structures in terms of heat retention
   - describe the particle model of matter, in which every object consists of particles in motion, and describe the effect of temperature on this motion *(e.g., observe Brownian motion)*
   - examine the roles of convection and conduction in distributing heat in natural and technological systems *(e.g., sea and land breezes, cast-iron pots and pans)*
   - describe how large bodies of water, such as oceans and lakes, have a moderating influence on climate *(e.g., compare the climates of Vancouver and Calgary)*

2. investigate common methods and devices designed to control the transfer of thermal energy
   - investigate technologies that reduce thermal energy transfer *(e.g., clothing construction strategies, insulation, cavity walls)*
   - examine devices and methods that protect against potentially dangerous thermal energy transfer *(e.g., household appliances, protective clothing worn by firefighters, internal combustion engine)*

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- examine variations in absorption or loss of heat in a substance being heated or cooled, manipulating variables, including the amount and type of material *(e.g., motor oil, cooking oil, water)*

3. describe and compare simple machines as devices that transfer energy and multiply forces or distances
   - describe simple machines as devices that transfer energy *(e.g., screws, ramps, hammers, hockey sticks, tennis rackets)*
   - describe simple machines as either force multipliers or distance multipliers
   - examine common household machines in terms of force multipliers and ways in which work is made easier *(e.g., can openers, crowbars, automobile jacks, scissors and hedge clippers).*

Skill Outcomes

Initiating and Planning

Students will:

ask questions about the relationships among observable variables and conduct investigations to address those questions

- identify questions to investigate arising from practical problems and issues *(e.g., investigate common machines that change the direction, speed or magnitude of a force, such as automobile jacks, can and bottle openers, meat grinders, bicycles and ramps)*
- state a prediction and a hypothesis based on background information or on an observed pattern of events *(e.g., hypothesize the relationship between the rate of thermal conduction in different materials and insulative properties)*
- conduct an experiment and identify the major variables.

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- use instruments effectively and accurately to collect data *(e.g., collect data on daily household energy consumption by recording electricity and gas meter readings over a two-week period; organize and display data)*
- use tools, technology and apparatus safely *(e.g., build a container to keep material hot or cold).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- examine patterns and trends in data and explain possible relationships among the major variables *(e.g., suggest possible reasons for daily fluctuations in domestic energy consumption)*
- identify potential applications of findings *(e.g., perform an experiment to investigate how well various materials insulate; graph temperature changes)*
- test and evaluate designs and prototypes in terms of function, reliability, safety, efficiency, use of materials and impact on the environment *(e.g., test insulating materials and methods; determine the efficiency of a machine).*

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Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- receive, understand and act on the ideas of others *(e.g., revise laboratory reports based on feedback from others)*
- communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means *(e.g., draw diagrams that show the differences between particles in solids, liquids and gases; communicate, using the terms thermal energy and temperature).*

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., explore and use a variety of methods and resources to increase knowledge and skills and to solve problems; recognize that part-time jobs require science- and technology-related knowledge and skills)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., recognize that the use of modern Western approaches to technology are not the only ways in which people, such as Aboriginal peoples, have met their needs)*
Scientific Inquiry	• apply a variety of strategies to investigate questions, problems and issues and apply scientific methods to carefully gather evidence when investigating problems and issues *(e.g., ask questions and conduct research to increase understanding)*
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., seek the point of view of others and consider a multitude of perspectives; accept constructive criticism when sharing ideas or points of view)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., promote actions and technologies that are not injurious to the environment; consider the impact of technology and weigh scientific, technological and ecological factors)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., keep the work station uncluttered, with only appropriate materials present).*

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Unit C: Investigating Matter and Energy in Living Systems (Science and Technology Emphasis)

Overview

Life processes require the exchange of matter between living systems and the external environment. Students investigate life processes at the organism and system level. In closely studying the digestive and circulatory systems, students understand that a healthy diet and lifestyle is crucial to their wellness.

Focusing Questions

1. What lifestyle choices will increase the health of our organs and organ systems?
2. How do cells, which are microscopic and invisible to the naked eye, work together in organs and organ systems to carry out life functions?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- structures and functions of, and the relationship between, the digestive and circulatory systems
- diets and human nutritional needs
- social influences on human diet-induced disorders and circulatory diseases
- structure and function of plant and animal cell parts
- life functions common to living systems
- functions of cells in organs and organ systems
- photosynthesis and respiration
- capture, storage and use of energy by living organisms
- role of technology to monitor life functions

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. examine, in general terms, the exchange of matter by the digestive and circulatory systems, the functional relationship between the two systems and the need for a healthy diet and lifestyle
   - investigate human nutritional needs, using *Canada's Food Guide to Healthy Eating* and other resources
   - assess the nutrient components of prepared foods by reading labels and evaluate a variety of popular diets in terms of nutrient composition
   - explain, in general terms, how diets that include excessive amounts of certain foods may influence body function *(e.g., foods high in cholesterol, salt, fats)*
   - examine and discuss the role of mixed and vegetarian diets in meeting human nutritional needs
   - recognize how diet/eating habits, other than traditional foods, have impacted Aboriginal and other cultures
   - examine the intake and processing of matter by the digestive system *(e.g., foods are broken down into molecules that are absorbed into the blood stream from the intestine; food intake leads to increased blood sugar and mineral levels)*
   - describe, in general terms, the role of the heart and lungs in the circulatory system and in the exchange and distribution of matter processed by the digestive system

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2. examine disorders of the digestive and circulatory systems induced by genetic, lifestyle and environmental factors
   - describe, in general terms, how the digestive and circulatory systems interact to assist in the maintenance of balance (homeostasis) in the human organism
   - explain that illness and possibly death may result when the body cannot accommodate major disturbances within the digestive, excretory and circulatory systems *(e.g., appendicitis, kidney failure, heart attacks)*
   - examine a technology that is used to diagnose imbalances *(e.g., endoscope, stethoscope)* or to intervene and preserve balance (homeostasis) *(e.g., kidney dialysis machine, pacemaker)*
   - examine the effect of social factors on human digestive and circulatory well-being and disorders *(e.g., ulcers, anorexia, bulimia, high blood pressure, heart and arterial diseases, as they relate to fitness level and diets)*

3. describe, in general terms, the structure and function of plant and animal cell parts
   - examine the structure of the major parts of plant and animal cells, including the cell membrane, nucleus, vacuole, mitochondrion, chloroplast and cell wall

4. identify and compare, in general terms, the life functions common to living systems, from cells to organ systems
   - examine the relationship between photosynthesis and cellular respiration in terms of biological energy storage *(e.g., capture of energy from the sun in glucose during photosynthesis and the release of energy from glucose during cellular respiration)*
   - examine life functions common to living systems *(e.g., energy conversion, response to the environment, growth, reproduction, conservation or dissipation of thermal energy, torpor, dormancy, hibernation, estivation, vascular skin, sweat gland behaviour)*
   - identify the organs and systems in plants and animals that perform life functions
   - identify the major human organ systems that perform critical life functions *(e.g., energy conversion, response to the environment, growth, reproduction, conservation or dissipation of thermal energy)*
   - examine how cell structure is adapted for specific life functions *(e.g., stomata on the leaves for water balance; skin cells are flat to cover a large surface area; plant cell walls provide structural support; nerve cells are long for transmission of impulses; storage of chemical energy in roots such as sugar beets, stems such as sugar cane and fruits such as apples)*
   - identify the role of modern technology in monitoring critical life functions in humans *(e.g., ultrasound, heart monitor, blood pressure cuff, blood glucose monitoring devices).*

Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and conduct investigations to address those questions

- identify strategies, tools and other resources for gathering and organizing information/data
- identify questions arising from practical problems and issues *(e.g., conduct a search, using a wide variety of electronic sources, when investigating technology used to monitor critical life functions)*
- identify the consequences of various strategies to solve problems
- identify the variables related to an investigation or experiment.

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Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables *(e.g., identify the manipulated, responding and controlled variables for an experimental investigation of the effect of exercise on heart rate)*
- use instruments effectively and accurately to collect data *(e.g., prepare wet mounts of tissue and observe cellular structures specific to plant and animal cells; observe structures using microscopes)*
- select and integrate information from various print and electronic sources or from several parts of the same source *(e.g., use models, computer simulations)*
- use tools and apparatus safely *(e.g., use the compound microscope to identify cellular structures, from prepared slides of plant and animal tissue or from microslides, and accurately represent these structures in clearly labelled diagrams).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- state a conclusion, based on experimental data, and explain how evidence gathered supports or refutes an initial idea *(e.g., observe the feeding behavior of paramecia and compare to the processes that occur in a human organism)*
- identify problems in the way a prototype or constructed device functions *(e.g., examine models of organs that perform a specific function)*
- identify new questions and problems that arise from what was learned *(e.g., "How do water and dissolved materials move in living plant and animal cells?").*

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- receive, understand and act on the ideas of others *(e.g., revise prototype designs based on feedback from others)*
- communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means (*e.g., research the physiological basis of a specific disorder in one of the systems studied; present this information to peers in oral form or in a document, using style sheets and word-processing techniques)*
- defend a position on an issue or a problem, based on their findings *(e.g., research how individual lifestyles, such as smoking, inactivity and stress, and eating habits, such as a high fat diet, affect the functioning of the circulatory system).*

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Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., research the answers to their own questions)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., recognize the contribution of science and technology to the progress of civilization)*
Scientific Inquiry	• apply a variety of strategies to investigate questions, problems and issues and use factual information and rational explanations when investigating problems and issues
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., provide the same attention and energy to the group's product as to a personal assignment)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., consider all perspectives when addressing issues; weigh scientific, technological and ecological factors)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., keep the work station uncluttered, with only appropriate materials present).*

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Unit D: Investigating Matter and Energy in Environmental Systems (Social and Environmental Contexts Emphasis)

Overview

Energy from the Sun sustains living systems and maintains equilibrium in the biosphere. In the biosphere, matter is recycled along natural pathways. Students learn, however, that increasing human population, human activity, use of energy and reliance on manufactured materials are having an impact on the movement of energy in the biosphere. This raises global concerns about sustainability.

Focusing Questions

1. How does human activity influence the natural flow of energy in the environment?
2. Should humans as a species be concerned about the effect of their activities on other species and the environment?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- role of living organisms in cycling matter
- food chains, food webs and energy pyramids
- maintaining equilibrium in the biosphere
- recycling of human-generated wastes
- biodegradable materials
- impact on modern agricultural technologies
- biotic and abiotic factors and ecosystems
- factors affecting population growth
- human impact on ecosystems

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. examine how the flow of matter in the biosphere is cyclical along characteristic pathways and can be disrupted by human activity
   - examine natural food chains, food webs and energy pyramids
   - investigate how human societies, including traditional Aboriginal societies, influence the cycling of matter in the biosphere
   - examine the costs and benefits of technological developments that result in materials the ecosystem cannot recycle *(e.g., disposable plastics, heavy metals)*
   - examine how biodegradable materials reduce the impact of human-made products on the environment
   - compare the recycling of matter by society with the natural cycling of matter through ecosystems
   - examine the impact of modern agricultural technology on the cycling of matter through natural pathways
   - identify the needs and interests of society that have led to technologies with unforeseen environmental consequences *(e.g., fishing technologies that result in harvesting rates that are higher than reproduction rates, use of pesticides such as DDT, impact of automobile emissions on atmospheric composition)*

2. examine a local ecosystem in terms of its biotic and abiotic components and describe the factors that maintain its equilibrium
   - describe, in general terms, the characteristics of two Alberta biomes *(e.g., parkland, boreal forest, mountain, grassland)*
   - define ecosystems in terms of biotic and abiotic factors *(e.g., common plants and animals, latitude, altitude, topography)*

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- examine how various abiotic factors influence biodiversity in an ecosystem *(e.g., climate, substrate, temperature, elevation)*
- explain how various factors influence the size of populations *(e.g., immigration, emigration, birth rate and death rate, food supply, predation, disease, number of offspring produced, climate change)*
- examine how interactions among organisms limit populations *(e.g., predation, parasitism, competition)*
- examine the relationship between land-use practices and altering ecosystems *(e.g., swamp drainage, slash-and-burn forestry, agriculture)*
- recognize the purpose of environmental laws.

Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and conduct investigations to address those questions

- identify questions arising from practical problems and issues *(e.g., develop questions related to recycling, ozone thinning)*
- identify the manipulated, responding and controlled variables *(e.g., investigate the amount of waste materials produced by a school or family on a daily or weekly basis)*
- select appropriate methods and tools to collect data and information to solve problems *(e.g., conduct a search for environmental projects, using a wide variety of electronic sources).*

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables *(e.g., perform experiments to demonstrate that cellular respiration releases thermal energy)*
- organize data, using a format that is appropriate to the task or experiment *(e.g., review the data collected in an ecosystem study and present this information in a written or graphic format or in an oral presentation to peers)*
- select and integrate information from various print and electronic sources *(e.g., research the influence of a specific living organism, such as sea birds, on the cycling of matter through the biosphere and communicate information in the form of a clearly written report; create a database or spreadsheet to convey information on populations).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs, line graphs
- identify the possible strengths and weaknesses of different methods of collecting and displaying data *(e.g., examine methods used to collect and display biotic and abiotic data from an ecosystem)*

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- state a conclusion, based on experimental data, and explain how evidence gathered supports or refutes an initial idea
- identify new questions and problems that arise from what was learned *(e.g., "Should there be more controls on bringing live animals and plants to Canada and other countries?"; "How can we reduce the amount of household wastes?").*

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- receive, understand and act on the ideas of others *(e.g., revise text documents based on feedback from others)*
- communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means *(e.g., represent the movement of matter and energy in an ecosystem, using food chains, food webs or pyramids, and communicate this information in the form of a graphic illustration)*
- work cooperatively with team members to carry out a plan *(e.g., perform a field study on an aquatic or terrestrial ecosystem)*
- defend a position on an issue or a problem, based on their findings *(e.g., investigate reduction of household wastes)*
- use a variety of strategies to troubleshoot group work problems as they arise.

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., demonstrate an interest in science and technology topics not directly related to classroom studies)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., consider scientific, technological, economic, cultural, political and environmental factors when formulating conclusions, solving problems or making decisions on a Science, Technology and Society [STS] issue)*
Scientific Inquiry	• seek and relate evidence when evaluating alternative approaches to investigations, problems and issues *(e.g., insist on evidence before accepting a new idea or explanation for waste reduction)*
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., be attentive when others speak; be nonjudgmental in the discussion of ideas and plans)*

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Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., examine their personal role in the preservation of the environment; make a personal decision based on feelings of responsibility toward less privileged parts of the global community and toward future generations)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., consider safety and show concern for the environment when disposing of used materials).*

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Unit A: Applications of Matter and Chemical Change (Science and Technology Emphasis)

Overview

Students extend their understanding of matter by investigating and classifying simple chemical reactions used at home and in the workplace. Students also become aware that many different materials can be created from a relatively small number of components and that technologies based on chemical change are widely used in producing useful materials for our daily use.

Focusing Questions

1. What are some of the chemical reactions that are important in society and in meeting our personal needs?
2. How is knowledge about types of chemical reactions applied in technological products and processes found at home and in the workplace?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- commonly used materials and chemical change in everyday life
- Workplace Hazardous Materials Information System (WHMIS) and Hazardous Household Product Symbols (HHPS)
- evidence of chemical change
- description and classification of combustion and rusting reactions, acid-base reactions and simple composition and decomposition reactions
- chemical reactions at home and in the workplace
- environmental effects of chemical change technologies

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. identify how everyday life depends upon technological products and processes that produce useful materials and energy
   - identify common materials and their uses and describe how everyday life has changed over the past 100 years with the development of new materials *(e.g., acids, bases, alloys, plastics, ceramics, fibres, composites)*
   - identify examples of the chemical changes involved in cooking, cleaning, personal care and gardening *(e.g., acids in vinegar, citrus fruits and rhubarb react with aluminum kitchen cookware; bases in drain cleaners react with grease; pesticides interfere with metabolic processes in living systems)*
   - identify and apply appropriate safety standards, including WHMIS and HHPS, at home, in the workplace and in the community when using chemicals

2. investigate and classify chemical reactions
   - name simple compounds from chemical formulas and recognize the names of substances that are used everyday
   - understand the relationship among chemical formulas, composition and name *(e.g., simple acids, bases, salts)*

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- investigate and identify evidence of chemical change *(e.g., change of phase, appearance, colour, odour, energy such as heat and light)*
- investigate the changes to reactants and products in fossil fuel combustion and rusting reactions
- investigate and classify endothermic and exothermic reactions *(e.g., chemicals mixing in a cold pack, burning natural gas)*
- investigate and classify simple composition and decomposition reactions *(e.g., tarnishing of silver, electrolysis of water)*
- identify simple composition, decomposition, combustion and neutralization reactions when they are given word and/or chemical equations, products and reactants

3. examine common technological products and processes encountered in everyday life and the workplace and examine their potential effects on the environment
   - examine common acid-base neutralization reactions *(e.g., neutralization of stomach acid by antacids, use of lemon juice on fish dishes)*
   - investigate chemical processes occurring in everyday life *(e.g., acid-base reactions in cleaning and food processing, dyeing hair, washing clothes, gasoline combustion in an automobile engine, swimming pool maintenance, rusting metal)*
   - give possible examples of how technology has addressed the problem of corrosion *(e.g., protect with paint, oil, plastic or metal; use alloys)*
   - examine greenhouse gases and air pollution resulting from combustion reactions *(e.g., carbon dioxide and carbon monoxide released when methane is burned in a household furnace)*
   - examine technologies used to reduce the emissions that cause acid deposition.

Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and plan and conduct investigations to address those questions

- identify questions to investigate that arise from practical problems and issues *(e.g., "What environmental factors have the greatest effects on rusting?")*
- identify the potential strengths and weaknesses of possible solutions to a given practical problem
- select appropriate methods and tools to collect data and conduct investigations and experiments.

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables
- compile and organize data, using appropriate formats and data treatments to facilitate interpretation *(e.g., lists in charts and tables; observe physical and chemical changes)*
- use library and electronic research tools to collect information on a given topic *(e.g., list automobile technologies that are used to reduce harmful emissions)*
- select and integrate information from various print and electronic sources or from several parts of the same source *(e.g., prepare an inventory of and classify useful acids and bases used in a typical day)*
- construct and test a prototype of a device or system and troubleshoot problems as they arise

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- demonstrate a knowledge of WHMIS standards by selecting and applying the proper techniques for handling and disposing of materials *(e.g., recognize substances, circumstances and actions that may be hazardous to people and the environment).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables and graphs *(e.g., report findings of their investigations of chemical change)*
- apply criteria to evaluate evidence and sources of information *(e.g., evaluate information on the technologies used to reduce the emissions that cause acid deposition)*
- state a conclusion, based on experimental data, and explain how evidence gathered supports or refutes an initial idea *(e.g., report on the results of an investigation into the effectiveness of antacid tablets)*
- identify practical problems in the way a technological device or system functions *(e.g., suggest ways to reduce air pollution or rusting).*

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- communicate questions, ideas and intentions and receive, understand, support and respond to the ideas of others *(e.g., use appropriate communication technology to elicit feedback from others)*
- work collaboratively with team members to conduct a plan and to troubleshoot as problems arise
- evaluate individual and group processes used in planning, problem solving and decision making and in the completion of a task *(e.g., assess processes used to construct a device that reduces CO emissions).*

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., maintain interest or pursue further studies in science; recognize that part-time jobs require science- and technology-related knowledge and skills)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., recognize the contribution of chemistry and technology to the progress of civilization)*

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Scientific Inquiry	• seek and apply evidence when evaluating alternative approaches to investigations, problems and issues
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., accept responsibility for any task that helps the group complete an activity; be attentive when others speak; share responsibility for errors made or difficulties encountered by the group)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., walk, rather than drive, to neighbourhood stores to reduce emissions of greenhouse gases; assume part of the collective responsibility for the impact of humans on the environment)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., write safety and waste-disposal concerns into a laboratory procedure; seek assistance immediately for any first-aid concerns, such as cuts, burns or unusual reactions).*

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Unit B: Understanding Common Energy Conversion Systems (Science and Technology Emphasis)

Overview

Students investigate a variety of important energy conversions occurring in biological, chemical, physical and technological systems. Although energy appears in many forms and is essentially conserved, in each energy transformation the availability of useful energy decreases. Students learn that the technologies for extracting, processing and using fossil fuels involve converting energy into more useful forms for our use.

Focusing Questions

1. What energy conversions occur in biological, chemical, physical and technological systems?
2. How efficient are various energy converters at converting energy to useful forms?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- energy transformations and conservation
- generation and distribution of electricity
- energy consumption and electrical household devices as converters of energy
- rate of energy transfer and efficiency
- chemical and energy changes in chemical and biological systems
- living organisms as energy converters
- formation, extraction and combustion of fossil fuels
- fossil fuel-based technologies and quality of life for further generations

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. investigate and interpret the transformation and conservation of various forms of energy in physical and technological systems
   - investigate evidence of energy transformations in the home and everyday contexts *(e.g., simple machines, electrical devices, chemical reactions)*
   - design, construct and evaluate a simple model or device that transforms energy from one form to another *(e.g., windmill, water wheel, model vehicle powered by rubber bands/mousetraps/carbon dioxide/electric motor)*
   - describe an energy transformation system in terms of input, converter and output *(e.g., an electric kettle)*
   - examine the law of conservation of energy to trace energy transformation, dissipation and availability in physical and technological systems *(e.g., swinging pendulum)*

2. investigate electrical energy conversion devices in terms of energy conversions, rate of energy transfer and efficiency
   - examine electrical power generation in terms of converting thermal/hydro/wind/solar/nuclear energy into electricity
   - compare the efficiency of electrical power distribution systems by tracing the energy conversions that occur in a variety of household devices *(e.g., power tools, electric automobiles, microwave and conventional ovens, fluorescent and halogen light bulbs)*
   - examine why the useful output energy in machines is always less than the input energy
   - devise a plan for making more efficient use of household energy conversion devices *(e.g., use of full loads in a dishwasher or clothes dryer; use of appropriate wattage light bulbs or compact fluorescent light bulbs)*

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3. investigate the energy conversions associated with change in chemical and biological systems
   - investigate the common chemical reactions that produce or absorb energy *(e.g., light and heat emitted by the combustion of fossil fuels, cold and hot packs)*
   - examine and list the requirements of photosynthesis *(e.g., carbon dioxide, water, chlorophyll in chloroplasts and sunlight)*
   - examine the process of respiration in which glucose and oxygen are converted to energy, carbon dioxide and water
   - describe food as fuel for the human body *(e.g., meeting its needs for normal metabolic functions, exercise and growth or repair of cells)*
   - identify the sources of energy in food *(e.g., carbohydrates, fats and protein)* and explain, in general terms, why there needs to be a balance between food intake and energy output
   - examine the factors that affect metabolism *(e.g., age, level of fitness, time of day, exercise/activity)* and compare daily energy requirements of individuals at various stages of growth and activity levels *(e.g., energy requirements of a newborn, teenager, office worker and labourer; energy requirements while sleeping, running)*
   - examine the formation of fossil fuels *(e.g., oil, coal and natural gas)*

4. examine the impact of fossil fuel-based technologies and their importance in meeting human needs
   - explain the importance of the fossil fuel industry in Alberta in meeting energy requirements
   - compare present fossil fuel consumption, by industry, homes and automobiles, with projected consumption in the future
   - examine the sources of fossil fuels and the extraction and refining processes
   - assess the impact of fossil fuel-based technologies on the environment
   - assess the importance of combustion reactions to a modern industrial society and describe the implications of depleting fossil fuel reserves.

Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and conduct investigations to address those questions

- investigate questions that arise from practical problems and issues *(e.g., "How can we measure the power of the human body?")*
- formulate operational definitions of major variables *(e.g., define power, energy and metabolism)*
- identify the potential strengths and weaknesses of practical problems
- evaluate and select appropriate instruments for problem solving, inquiry and decision making *(e.g., describe how to measure the energy output of a device or process and select the proper tools for the task).*

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables
- compile and organize data, using appropriate formats and data treatments to facilitate interpretation *(e.g., lists in charts and tables, sources of energy in foods)*

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- use library and electronic research tools to collect information on a given topic *(e.g., collect data on the energy requirements of individuals at varying stages of growth and levels of activity)*
- select and integrate information from various print and electronic sources or from several parts of the same source *(e.g., collect background information to investigate obesity, starvation or anorexia nervosa)*
- construct and test a prototype of a device or system and troubleshoot problems as they arise *(e.g., construct a device that uses solar or wind energy).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables and graphs *(e.g., report findings from an experiment that measures the power of the human body)*
- state a conclusion, based on experimental data, and describe how evidence gathered supports or refutes an initial idea *(e.g., describe why the input energy of machines is always greater than the output energy)*
- identify practical problems in the way a technological device or system functions
- evaluate a personally designed and constructed device on the basis of predeveloped criteria *(e.g., assess an energy conversion).*

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- communicate questions, ideas and intentions and receive, interpret, understand, support and respond to the ideas of others *(e.g., collect and display data on household energy consumption by reading and recording data from electricity and gas meters over a two-week period)*
- select and use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate ideas, plans and results
- work cooperatively with team members to conduct a plan and to troubleshoot problems as they arise.

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

Interest in Science	*Students will be encouraged to:* • show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., research answers to their own questions, such as, "How could I reduce my personal energy consumption?")*

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Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., consider social and cultural contexts when discussing body images; recognize the contribution and skill of technologists in the extraction of oil from the tar sands)*
Scientific Inquiry	• seek and apply evidence when evaluating alternative approaches to investigations, problems and issues *(e.g., expend the effort and time required to make valid conclusions)*
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., participate with others in peaceful conflict resolution; share the responsibility for errors made or difficulties encountered by the group)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., participate in the social and political systems that influence environmental policy in their community)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., assume responsibility for the safety of all those who share a common working environment by cleaning up after an activity and disposing of materials in a safe place).*

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Unit C: Disease Defence and Human Health (Social and Environmental Contexts Emphasis)

Overview

The human organism as a living system is affected by a variety of environmental and genetic factors. Students investigate the nature of these factors, their effects on the health of the human organism and how social conditions and decisions play a role. Students learn about the body's natural defence systems and about medical techniques used to minimize the risk of exposure to environmental toxins and disease-causing agents. Although inheritance is well understood, minimizing genetic disorders is a complex issue, involving scientific, ethical and social perspectives.

Focusing Questions

1. How do social, environmental and genetic factors affect human health?
2. How have improved sanitary conditions, personal hygiene and developments in modern medicine, e.g., aseptic techniques, vaccinations and antibiotics, enhanced human health?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- social impact on human health
- role of environmental factors; e.g., toxins, disease-causing agents
- communicable and noncommunicable diseases
- human actions to reduce contamination by disease-causing agents
- role of the human body's defence systems
- principles of simple inheritance
- impact of recent genetic research on societal decision making

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. describe how human health is affected by environmental factors and describe the need for action by society to improve human health
   - describe, in general terms, how human diseases may arise from an interaction of variables, including poor nutrition, stress, disease-causing agents and environmental contamination
   - examine the relationship between social conditions and disease *(e.g., hunger and malnutrition; sanitation and bacterial, viral, fungal diseases)*
   - list the social and economic impact of pandemic diseases on past and present societies *(e.g., Black Death; 1918 Influenza; severe acute respiratory syndrome (SARS); impact of European diseases, such as tuberculosis, on Canada's First Nations communities)*
   - examine, from a historical perspective, the connection between diseases and contaminated drinking water, air pollution and personal hygiene
   - examine the impact of public health initiatives and the maintenance of high standards of personal hygiene in fostering healthier societies and individuals *(e.g., provision of potable water, clean air standards, treatment of human and animal wastes, safe handling of food)*

2. examine the relationship between human health and environmental disease-causing agents
   - distinguish between communicable and noncommunicable diseases
   - investigate the conditions necessary for the growth of a specific disease-causing agent *(e.g., viruses, fungi, bacteria)*
   - describe how different communicable diseases are transmitted and how they affect human health *(e.g., common cold, influenza)*

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- examine how noncommunicable diseases are transmitted and how they affect human health *(e.g., food poisoning due to salmonella or E. coli, cholera, dysentery)*
- investigate how a specific food-handling or preparation process is designed to prevent microbial contamination of the final product *(e.g., freezing, pickling, salting, vacuum packaging and radiation)*

3. examine the natural mechanisms that protect the human organism from disease-causing agents
   - examine the role of the human organism's physical defences in preventing infection by disease-causing agents *(e.g., skin, mucus membranes, tears, saliva, digestive system)*
   - investigate the role of blood components *(e.g., white blood cells and antibodies)* in controlling pathogens
   - describe, in general terms, how the immune system protects the body by attacking foreign or abnormal proteins
   - investigate how different antibiotic therapies, vaccines or medications are used to treat or prevent a disease *(e.g., measles, rabies, tetanus, smallpox, tuberculosis)*
   - investigate how the overuse and improper use of antibiotics may lead to the development of resistance in bacteria *(e.g., use of prescription antibiotics for viral infections)*

4. describe the role of genes in inherited characteristics and human health
   - describe the role of genes in inherited characteristics *(e.g., hitchhiker's thumb; earlobe attachment; hair, skin and eye colour)*
   - identify the role of chromosomes in determining the sex of human offspring.

Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and conduct investigations to address those questions

- investigate questions that arise from practical problems and issues *(e.g., "How effective are commercially available antibacterial cleaners on bacteria found in the home or school?")*
- evaluate and select appropriate instruments for problem solving, inquiry and decision making *(e.g., decide what needs to be measured and select the proper procedures and tools for the task).*

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables
- use instruments effectively and accurately to collect data *(e.g., observe prepared slides of various disease-causing agents or prepared slides of the cellular components of human blood)*
- compile and organize data, using appropriate formats and data treatments to facilitate interpretation *(e.g., graph results of a simulated spread of infection; track the population growth of bacteria)*
- use library and electronic research tools to collect information on a given topic *(e.g., use current, reliable information sources to investigate the spread of diseases, such as severe acute respiratory syndrome (SARS), tuberculosis, cholera)*
- select and integrate information from various print and electronic sources or from several parts of the same source *(e.g., investigate genetic diseases on the Internet).*

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Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables and graphs *(e.g., graph the incidence of a particular disease over time)*
- assess the reliability and adequacy of data
- state a conclusion, based on experimental data, and describe how evidence gathered supports or refutes an initial idea *(e.g., hand washing by hospital staff reduced infection in patients in the 1800s)*
- identify practical problems in the way a technological device or system functions.

Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- communicate questions, ideas and intentions and receive, interpret, understand, support and respond to the ideas of others *(e.g., participate in a variety of electronic group formats)*
- select and use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate ideas, plans and results
- work cooperatively with team members to carry out a plan and to troubleshoot problems as they arise
- evaluate individual and group processes used in planning, problem solving and decision making and in the completion of a task.

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., investigate health issues; investigate careers, such as practical nursing and work in the food service industry)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., research ethical dilemmas associated with advancements in genetics)*
Scientific Inquiry	• seek and apply evidence when evaluating alternative approaches to investigations, problems and issues *(e.g., insist on evidence before accepting new ideas or explanations)*

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Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., assume a variety of roles as required; be attentive when others speak)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment *(e.g., share the responsibility for maintaining clean air and clean water)*
Safety	• show concern for safety when conducting and reviewing activities *(e.g., follow proper food-handling and preparation processes when working in the kitchen; show consideration when ill by limiting the exposure of others to disease-causing agents).*

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Unit D: Motion, Change and Transportation Safety (Nature of Science Emphasis)

Overview

There is a greater risk of being injured or killed while travelling in a motor vehicle than when engaging in other common activities. Recognizing risk, governments and the transportation industry are working on new safety systems and practices designed to protect passengers. Students learn that these systems are based upon an understanding of the law of conservation of momentum.

Focusing Questions

1. What transportation factors in our community help reduce passenger risk?
2. How has knowledge about moving objects and conservation of momentum affected the design of automobiles, safety regulations and practices governing transportation?

Key Concepts

The following key concepts are developed in this unit and may also be addressed in other units at other grade levels. The intended level and scope of treatment is defined by the outcomes below.

- reaction time, speed and safe following distance
- effects of collision durations
- safety systems designed to reduce collision effects
- transportation safety regulations

Outcomes for Science, Technology and Society (STS) and Knowledge

Students will:

1. distinguish between scientific evidence and personal opinion to examine the need for safety systems and regulations
   - list the factors influencing the ability to make sudden stops *(e.g., degree of wakefulness, visual acuity, state of mind, road and weather conditions)*
   - examine the need to stay a safe distance behind another automobile when travelling at highway speeds *(e.g., maintaining a two-second gap under normal driving conditions)*
   - discuss the consequences of a shorter or longer reaction time
   - list traffic safety factors *(e.g., reasons why some traffic lights stay yellow for three seconds and others for five seconds, reasons why some traffic lights have advanced warning flashers, speed bumps, guardrails, rumble strips)*
   - list the ways passengers can protect themselves from injury in accidents
   - identify the dangers faced by individuals in a motor vehicle accident
   - compare the death and injury rate in motor vehicle accidents to other causes of death and injury among adults and teenagers

2. apply the principles underlying the motion of objects to explain the need for safety devices and practices
   - examine how seat belts and air bags function in terms of momentum and dispersal of force *(e.g., explain why one cannot brace for a collision as a means of protection; explain why babies must be placed in special seats and not on a passenger's lap)*
   - examine data and strategies comparing vehicle occupant injuries, for belted and unbelted occupants, before and after seat-belt legislation
   - compare the functioning of first- and second-generation air bags and explain the need to improve the design of air bags *(e.g., the design of first-generation air bags assumed drivers to be adult males who were not wearing seat belts; for the second-generation design, these assumptions were revised to reduce speed and force of air bag deployment)*
   - examine the application of the law of conservation of momentum in one dimension in a variety of situations involving two objects *(e.g., rear-end collision, recoil, jumping from a boat, traffic accidents, two people on skates pushing each other).*

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Skill Outcomes

Initiating and Planning

Students will:

ask questions about relationships among observable variables and conduct investigations to address these questions

- investigate questions that arise from practical problems and issues *(e.g., "How long does it take emergency personnel to respond to an emergency?")*
- conduct an experiment, identifying the major variables *(e.g., investigate how air bags work, using a partially inflated beach ball or plastic bag and a steel ball or rock to model the functioning of the air bag)*
- state a prediction and hypothesis based on available evidence and background information
- formulate general definitions of major variables *(e.g., force, momentum)*
- evaluate and select appropriate instruments for problem solving, inquiry and decision making.

Performing and Recording

Students will:

conduct investigations into the relationships among observations and gather and record data

- conduct procedures, controlling the major variables *(e.g., test different materials for use as a seat belt)*
- use instruments effectively and accurately to collect data *(e.g., develop a questionnaire to elicit community opinions about wearing seat belts)*
- compile and organize data, using appropriate formats and data treatments to summarize conclusions
- use library and electronic research tools to collect information on a given topic *(e.g., compare the risks involved in day-to-day transportation with other activities).*

Analyzing and Interpreting

Students will:

examine data and develop and assess possible explanations

- apply classification systems and nomenclature used in the sciences *(e.g., use terms such as force, speed, momentum)*
- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables and graphs *(e.g., draw a force–time graph for an investigation, comparing the effectiveness of cushioned and noncushioned toy automobiles)*
- examine patterns and trends in data
- assess the reliability and adequacy of data
- state a conclusion, based on experimental data, and describe how evidence gathered supports or refutes an initial idea *(e.g., investigate the statements, "More traffic accidents occur on Monday mornings." and "More pedestrians than drivers are killed by cars.").*

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Communication and Teamwork

Students will:

work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures and results

- communicate questions, ideas and intentions and receive, interpret, understand, support and respond to the ideas of others
- use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate ideas, plans and results *(e.g., graph results, using appropriate scales)*
- evaluate individual and group processes used in planning, problem solving and decision making and in the completion of a task *(e.g., group processes used to evaluate cars for their safety features).*

Attitude Outcomes

Students will be encouraged to develop and display an interest in science and scientific inquiry, mutual respect, collaboration, stewardship and safety at home, in the workplace and in community situations.

	Students will be encouraged to:
Interest in Science	• show interest in science-related questions and issues and pursue personal interests and career possibilities within science-related fields *(e.g., use a variety of methods and resources to increase their own knowledge and skills related to safety and driving)*
Mutual Respect	• appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds *(e.g., appreciate the benefits that have resulted from a better understanding of the law of conservation of momentum)*
Scientific Inquiry	• seek and apply evidence when evaluating alternative approaches to investigations, problems and issues *(e.g., describe safety issues in transportation)*
Collaboration	• work collaboratively when conducting investigations and when generating and evaluating ideas *(e.g., help motivate others, listen to the points of view of others)*
Stewardship	• demonstrate sensitivity and responsibility when pursuing a balance between the needs of humans and the requirements for a sustainable environment
Safety	• show concern for safety when conducting and reviewing activities *(e.g., consider safety regulations for drivers; respect others' space, materials and work during an activity).*

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KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES 10-4, 20-4, 30-4

Policy: Knowledge and Employability courses provide students who meet the criteria with opportunities to experience success and become well prepared for employment, further studies, citizenship and lifelong learning (*Knowledge and Employability Courses Policy 1.4.2*).

VISION

Through Knowledge and Employability courses, students become active and responsible citizens, achieve their educational and career goals, improve quality of life for themselves and their families and positively impact their communities.

PHILOSOPHY AND RATIONALE

The development of the Knowledge and Employability courses was based on input received from consultations with education stakeholders throughout the province. The distinctive sequence of courses was designed to meet the educational needs of students who learn best:

- when focusing on the development and application of reading, writing and mathematical literacy,[1] and on essential employability skills
- through experiential learning activities
- when meaningful connections are made between schooling and personal experiences.

Knowledge and Employability courses assist students in:

- transitioning from school to the workplace and community
- preparing for responsible citizenship
- gaining recognition, respect and value from employers and further education providers.

Knowledge and Employability courses promote student skills, abilities and work ethics, including:

- academic and occupational skills of a standard determined by the workplace to be necessary for success
- practical applications through on- and off-campus experiences and/or community partnerships
- career development skills to explore careers, develop a career-focused portfolio and assess career skills
- interpersonal skills to ensure respect, support and cooperation with others.

1. Mathematical literacy: Selecting and applying appropriate mathematical operations, problem-solving strategies, tools and technology, and communicating using mathematical vocabulary in home, workplace and community experiences.

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Aboriginal Perspectives and Experiences
For historical, constitutional and social reasons, an understanding of First Nations, Métis and Inuit (FNMI) experiences and perspectives, and recognition that First Nations, Métis and Inuit students have particular needs and requirements, is necessary to enable all students to be respectful and responsible citizens.

Knowledge and Employability courses serve to facilitate positive experiences that will help Aboriginal students better see themselves in the curriculum and assist non-Aboriginal students to develop a better understanding of Alberta's First Nations, Métis and Inuit peoples.

GOALS OF KNOWLEDGE AND EMPLOYABILITY COURSES

Knowledge and Employability courses provide students with practical and applied opportunities to develop the competencies necessary to meet or exceed the following goals. Knowledge and Employability courses prepare students to:

- earn a senior high school credential
- enter the workplace upon leaving school with employability and occupational skills that meet industry standards
- make successful transitions to other courses or to further education and training
- become responsible and contributing members of society.

CROSS-CURRICULAR, COMMUNITY AND WORKPLACE CONNECTIONS

Programs of study and resources for Knowledge and Employability courses are distinctive, in part, because they promote cross-curricular, community and workplace connections.

Cross-curricular Connections
Knowledge and Employability courses promote the integration of subjects to emphasize their interrelationships and connections to other school subjects. The philosophy of Knowledge and Employability courses is that students learn best when they can clearly recognize, in their course work, connections, applications and relevance to a variety of everyday experiences. Organizing for instruction may include thematic units, subject integration within units and/or projects in other subjects.

Community and Workplace Connections
Knowledge and Employability courses provide students with practical and applied opportunities to develop basic reading, writing and mathematical literacy. Community and workplace connections ensure learning within applied contexts, connecting the school with environments beyond school, and may include tours to local businesses and industries, mentorships, job shadowing and work experience.

Knowledge and Employability courses promote the development of career portfolios that help students connect their school experience to the world beyond school. Each portfolio will include exemplars of the student's on- and off-campus experiences and can be used when the student is seeking employment or further education/training opportunities. Items appropriate for inclusion in career portfolios include résumés, samples of written work, awards and/or their representations, teacher and self-evaluation checklists, workplace assessment tools and employer letters of recommendation.

SAFETY

Safety is emphasized and relevant information is incorporated throughout Knowledge and Employability courses, including basic safety rules and guidelines and information regarding the safe use of tools, equipment and materials in school, home, community and workplace settings.

TECHNOLOGY

The Information and Communication Technology (ICT) curriculum is infused throughout the Knowledge and Employability courses, including the use of computers and other technology, to support the instruction of technology within an applied context.

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ESSENTIAL UNIVERSAL SKILLS AND STRATEGIES

Knowledge and Employability courses emphasize the universal skills and strategies that are essential to all students, including the following:

- Interpersonal skills promote teamwork and respect for, support of and cooperation with others.
- Critical thinking promotes the analysis and appropriate applications of information.
- Creative thinking promotes the identification of unique connections among ideas and insightful approaches to questions and issues.
- Decision-making processes promote the making of timely and appropriate decisions.
- Problem-solving processes promote the ability to identify or pose problems and apply learning to consider the causes and dimensions of, and the solutions to, problems.
- Metacognition[2] enables students to become more aware of, and have greater control over, their own thinking and learning processes.

RELATIONSHIP TO OTHER COURSES

Each Knowledge and Employability course is consistent with the rationale, philosophy, program foundations and organization of other secondary courses. This consistency enables students, as appropriate, to progress through the Knowledge and Employability course sequence and/or to other secondary courses.

ENROLLMENT IN KNOWLEDGE AND EMPLOYABILITY COURSES

Students may take one or more courses in the sequence at any time during grades 8 through 12. Students may be enrolled in only Knowledge and Employability courses or in a combination of Knowledge and Employability and other secondary courses.

Information regarding the identification of students for enrollment in one or more courses can be accessed in the *Knowledge and Employability Courses Policy 1.4.2* and in the *Information Manual for Knowledge and Employability Courses, Grades 8–12,* 2006.

RATIONALE AND PHILOSOPHY OF THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

The Knowledge and Employability occupational component is for students who learn best through experiential learning activities in which the development of knowledge, skills and attitudes is relevant to their personal experiences. Meaningful connections between in-school learning and the community result in successful transitions from the school setting to the workplace and prepare students for responsible citizenship.

Throughout the Knowledge and Employability occupational component, student success is enhanced through continual:

- assessment of the needs, learning styles and developmental stages of students
- use of materials and school and community resources and strategies that assist in addressing cross-curricular, community and workplace connections.

GOALS OF THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

The Knowledge and Employability occupational component will:

- provide opportunities for students to explore a variety of career pathways
- provide opportunities for students to develop essential, employability and workplace competencies through practical activities related to the home, workplace and community

2. Metacognition: Learning-to-learn strategies; awareness of processes and strategies one uses when learning.

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- prepare students for employment by providing practical, workplace-related activities and projects common to, and representative of, a wide variety of careers; e.g., occupations at the C and D levels of the National Occupational Classification (NOC)
- promote curriculum integration by providing a practical environment and structure for the application, reinforcement and practice of Knowledge and Employability skills, as well as knowledge and attitudes in English language arts, mathematics, science and social studies
- provide opportunities for students to explore their personal strengths and interests related to future life and career opportunities
- promote the development of community partnerships, which connect the school with the larger community that surrounds and supports it, to assist students to transition from school to the workplace.

ORGANIZATION AND STRUCTURE OF THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

Throughout the Knowledge and Employability occupational component, students will investigate careers within broad occupational classifications, examine and connect their personal competencies and interests to employment opportunities, and make career choices based on thoughtful consideration.

In junior high school, the emphasis is on *exploration.* Students will:

- gain an awareness of the multiplicity of careers and career opportunities
- investigate a range of occupational areas
- gain an awareness of various working environments through an initial exposure
- examine personal interests and competencies
- develop basic essential and employability skills.

In senior high school, the emphasis is on *orientation* and *preparation.*

During the *orientation* stage, students will:

- link personal interests and competencies to career interests
- focus on groups of related occupations, based on career interests
- be exposed to a variety of working environments
- build upon and enhance their development of basic essential and employability skills.

During the *preparation* stage, students will:

- focus on specific occupations or occupational components
- continue to link personal interests and competencies to career interests
- continue to develop the basic essential and employability skills required for direct entry into the workplace in the occupational pathway(s) of interest.

COMMUNITY PARTNERSHIPS AND THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

Community partnerships are experiences that bring the community into the classroom or take the classroom into the community. Community partnerships are fundamental to the Knowledge and Employability occupational component because they provide opportunities for practical applications of competencies developed in the classroom and expose students to experiences beyond the school.

Community partnership participation increases as students progress through the occupational component. In junior high school, community partnerships may involve classroom guest speakers, skill demonstrations and tours to a variety of community locations, including work sites. Job shadowing and/or work study experiences may take place near the end of junior high school and may continue into senior high school. In senior high school, community partnerships may also include practicums and/or work experiences. Students in the last year of senior high school may spend a majority of their time off campus at a work site related to a selected career path.

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EDUCATIONAL PARTNERSHIPS

The Knowledge and Employability occupational component emphasizes the interrelationships among, and connections to, other school subjects, the home, the workplace and the community. Integrated thematic units, projects and community partnerships link other school subjects and career development with the occupational component areas of study and courses to promote cross-curricular, workplace and community connections. Teachers are encouraged to pursue a variety of options through community partnerships that will enable the use of speakers, mentorships and business sites for work study, job shadowing or work experience. The curriculum is designed to provide the flexibility to create a course that meets the needs of students. In schools where up-to-date equipment and technical training are not available, it is recommended to establish partnerships with local industries, thus providing a learning environment reflective of current skills and training.

An educational partnership is designed to offer occupational course content off campus. The course must, therefore, be delivered in accordance with the current off-campus education policy.

THE SENIOR HIGH SCHOOL KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

The senior high school Knowledge and Employability occupational component consists of a series of 5-credit courses that relate to well-defined occupational strands. Courses are numbered 10-4, 20-4, 30-4, and students progress through each course in sequence. The senior high school Knowledge and Employability course strands are:

- Art/Design and Communication
- Auto Mechanics
- Business Services
- Construction: Building
- Construction: Metal Fabrication
- Cosmetology
- Fabrics
- Foods
- Horticulture
- Human Care
- Natural Resources
- Workplace Readiness.

Courses at the 20 and 30 levels are split into specific areas of focus within a strand. Students may take as many courses in an area of focus as they can manage. The delivery of these courses and the different areas of focus depend on facilities, interest and the expertise of instructors. Courses at the 20 and 30 levels may also be offered through off-campus instruction, using the off-campus guide and support materials. The splitting of the senior courses provides flexibility for course delivery and supports the movement from *exploration* to *preparation* as a student progresses from Grade 10 to Grade 12. It is recommended that each 10-, 20- and 30-level occupational course be complemented with a related Workplace Readiness or Workplace Practicum course.

Senior high school Knowledge and Employability occupational courses emphasize the application of the practical skills necessary for success in the specified occupational strand. Knowledge and Employability 10-level courses provide opportunities for the *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, the students progress from *orientation* toward *preparation;* and in 30-level courses, students are involved in *preparation* for direct job entry.

The senior high school Knowledge and Employability occupational component has the potential to:

- prepare students for a variety of employment opportunities
- facilitate transfer to appropriate Career and Technology Studies (CTS) courses
- provide access to Registered Apprenticeship Program (RAP) courses
- provide access to Green Certificate courses
- develop competencies that meet or exceed industry or occupational standards.

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SAFETY IN THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

Safety is emphasized and relevant information is incorporated throughout the Knowledge and Employability occupational component. The safe use of equipment and materials and general home, community and workplace safety are integral to the courses. Each course includes outcomes on basic safety rules and guidelines that are to be applied when students are in the workplace and other settings and when they are handling and using tools, equipment, materials and supplies.

TECHNOLOGY IN THE KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT

Information and Communication Technology (ICT) outcomes have been infused into the specific outcomes of the Knowledge and Employability occupational component and are best learned within an applied context. As technology continues to advance, selecting and using appropriate, effective and efficient technologies that complement the learning process will enhance student performance.

LITERACY AND NUMERACY

The literacy and numeracy skills developed in the academic courses are further developed and reinforced in the Knowledge and Employability occupational component. Applying literacy and numeracy skills to a work context will enhance the students' abilities to speak and write effectively, to read, to comprehend and use written materials including graphs, charts and displays, and to use mathematical applications employed in the working world.

CAREER EXPLORATION AND AWARENESS

Career exploration, awareness, orientation and preparation are primary focuses of the senior high school occupational courses. For their occupation of interest, students should strive to discover the:

- required training or education
- employment expectations
- required duties
- salary expectations
- outlook for the future.

This exploration is crucial for students to identify occupations they might like and that are best suited to their individual strengths.

PORTFOLIO

Students develop and expand their career portfolios as they progress through Knowledge and Employability courses. Career portfolios include evidence of student competencies and abilities; e.g., workplace assessments, photographs of products made in occupational component courses and acknowledgement/recognition from community members.

The portfolio helps students to:

- reflect on personal growth and accomplishments
- recognize links among home, school and community education and activities
- collect materials to prepare applications for post-secondary education and scholarships
- collect materials to prepare for employment applications
- focus on career planning.

PREPARING FOR THE WORKPLACE

The workplaces of the 21st century require more from students than simply being able to read, write, compute or perform specific occupational tasks. Today's workplaces require students to think, solve problems, adapt to new situations, apply knowledge in new ways and work effectively with others.

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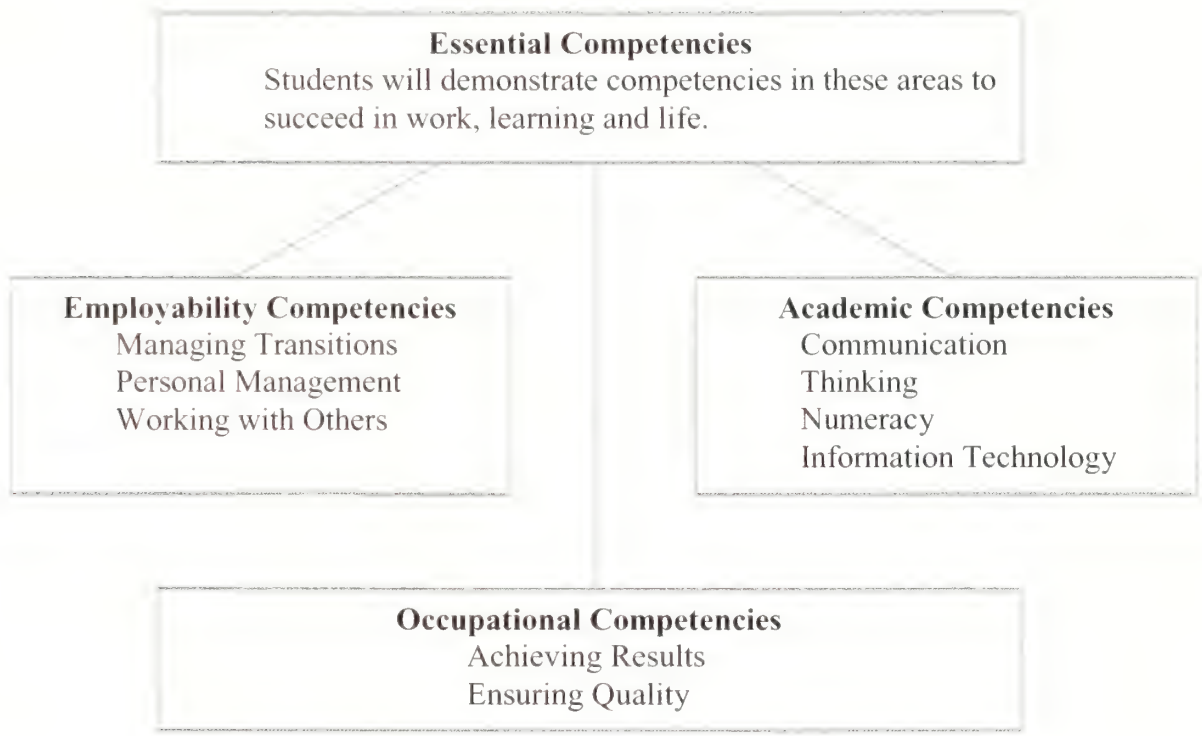
Essential competencies consist of employability, academic and occupational competencies. The essential competencies represent what individuals need to demonstrate to be successful in further education, in a career and in life. They describe the skills necessary for entry-level employment in all career pathways. When these skills are developed, they help support the specific occupational skills necessary for students to become workplace ready.

The Knowledge and Employability occupational courses address workplace skills that are fundamental to success in any occupation. The combination of academic, occupational and employability competencies will equip students to become responsible citizens and effective members of society and the world of work.



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ESSENTIAL COMPETENCIES

Essential competencies[3] for the senior high school Knowledge and Employability occupational component include the following:

Employability Competencies

These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace.

Managing Transitions
- Lifelong Learning
- Adapting to Change
- Career Development

Personal Management
- Self-development
- Risk Management

Working with Others
- Interpersonal Communication
- Building Community
- Teamwork

Academic Competencies

These minimum academic competencies provide a foundation for further learning.

Communication
- Listening and Speaking
- Reading
- Writing

Thinking
- Problem Solving and Decision Making
- Finding Information
- Creative Thinking

Numeracy
- Basic Operations
- Patterns and Relationships
- Shape and Space
- Statistics and Probability

Information Technology
- Computer Operations
- Computer Applications

Occupational Competencies

These competencies are necessary to succeed in a specific occupation or career.

Achieving Results
- Career Awareness
- Workplace Health and Safety
- Providing Service

Ensuring Quality
- Task Management

These essential competencies should be addressed throughout each occupational course. It is the responsibility of the teacher to infuse these outcomes into lessons as appropriate. The occupational context is the foundation on which students will build and demonstrate these competencies.

Teachers, students and employers can track the development of these competencies through the assessment of student performance in a variety of occupational contexts. Through the development of essential competencies, Knowledge and Employability occupational courses will build, in students, a strong foundation for successful future growth and lifelong learning.

The incorporation of essential competencies in the instruction and assessment of Knowledge and Employability occupational courses offers many opportunities to develop student knowledge, skills and attitudes and to assist students in making transitions to career, work and adult life. Although the occupational competencies are the focus of each course, employability and academic competencies should also be addressed at the teacher's discretion.

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3. *The Alberta Framework of Essential Competencies for Working, Learning and Living* and the Conference Board of Canada's *Employability Skills 2000+* were considered when developing the competencies framework for the Knowledge and Employability occupational component.

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Employability competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. The generic employability skills are interdependent and are not meant to be taught in isolation. Although some skills may be mastered more effectively through discrete instruction, this approach is not advocated for all employability skills. The occupational course structure permits a holistic method of instruction by linking the strategies and skills to the context of each occupational course.

As the rate at which students acquire generic employability skills differs, instruction and evaluation of employability skills should include the:

- assessment of student levels of performance
- diagnosis of particular areas of deficiency
- sequencing of instruction in a manner that will suit individual needs and growth patterns.

Employability competencies include the following:

Managing Transitions	
Lifelong Learning	Individuals are encouraged to develop self-knowledge regarding their own learning preferences. These competencies also provide a framework for accessing and applying both formal and informal learning.
Adapting to Change	Often change is imposed on individuals before they have time to adapt their thinking processes to new patterns. This may reduce their ability to think and act logically. Individuals must be able to identify and access personal and/or community resources to negotiate change successfully. This includes transitions to other courses, the workplace and post-secondary training or education.
Career Development	Individuals are encouraged to develop an interest in, and knowledge of, the operations involved in a specific business or industry. Students will be exposed to a variety of occupations to make informed decisions regarding their career paths. Students will also experience a variety of workplace environments to formulate standards of conduct and workplace performance.
Personal Management	
Self-development	These competencies relate to the whole individual in terms of personal growth, physical well-being and ethical conduct. As individuals progress through the competencies, they will gain an understanding of their own abilities and potential for further growth. They will also gain an appreciation of their responsibilities toward other individuals.
Risk Management	These competencies relate to both physical and mental safety and well-being. Students will develop competencies in identifying and addressing workplace hazards and safety information.
Working with Others	
Interpersonal Communication	Effective communication skills enhance an individual's success in virtually every endeavour. These competencies are designed to strengthen communication skills, including both verbal and nonverbal strategies.
Building Community	A community is a web of relationships among individuals who come together to achieve a common goal or purpose. These competencies focus on the development of understanding and respect for others. An ability to accept cultural differences, e.g., race, age group, sexual orientation and religious affiliation, is key to developing respectful relationships with others.
Teamwork	Competencies in interpersonal communication and building community lead to an individual's ability to work as part of a team to accomplish group goals.

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Academic competencies provide a foundation for further learning. The continuing development of academic skills is emphasized through the relevant and meaningful context of the occupational courses. Wherever possible, students and teachers should integrate the academic components and occupational learning. Inclusion of the academic competencies is designed to allow for further development of the students' abilities to build on their foundational skills.

Academic competencies include the following:

Communication	
Listening and Speaking	Students use these competencies to explore strategies for listening and for interpreting nonverbal communication cues. These competencies are also used when preparing for and making effective presentations.
Reading	These competencies address the understanding of text structures, the extraction of meaning from text and the formation of conclusions. The term "text" is broadly defined and includes oral, print, visual and multimedia communications.
Writing	These competencies address the steps in the writing process; e.g., gathering information, preparing an outline, composing the text and proofreading.
Thinking	
Problem Solving and Decision Making	Problem solving involves looking at possibilities and opportunities and examining and assessing possible solutions. The problem-solving process requires students to anticipate the possible consequences of solutions and make decisions in a thoughtful and effective way.
Finding Information	An individual needs to be fully informed to properly assess a situation. These competencies address how to locate various sources of information and assess the value of the information collected.
Creative Thinking	These competencies involve the observable behaviours that demonstrate students' development as creative thinkers. In the context of the Knowledge and Employability courses, creative thinking is most often used during the problem-solving or decision-making process. Individuals should foster their creativity, as creative thinking skills are often required in the workplace.
Numeracy	
Basic Operations	These competencies address basic number concepts and operations, including everything from simple addition and subtraction to the design or use of spreadsheets in a business setting.
Patterns and Relationships	These competencies address mathematical skills that help students make predictions and solve complex problems.
Shape and Space	These competencies address the use of measurement to solve problems.
Statistics and Probability	These competencies address the collection and analysis processes used to derive specific information, make predictions and solve problems.
Information Technology	
Computer Operations	These competencies address the basic functions and uses of a computer.
Computer Applications	These competencies address the use of a computer as a tool to accomplish various projects and assignments.

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Occupational competencies are necessary for success in a specific occupation or career. The occupational skills are designed to develop entry-level knowledge and experience with tools, equipment and materials specific to an occupational area. Students will develop knowledge of the processes required to use tools, equipment and materials safely to complete work-related tasks. Students will also develop skills in career awareness, workplace health and safety, providing service, making products and task management.

Occupational competencies include the following:

Achieving Results	
Career Awareness	These competencies create awareness of the training or education required for a particular occupation, employment expectations, required duties and personal interest.
Workplace Health and Safety	These competencies will ensure an awareness of safe workplace practices and procedures.
Providing Service	These competencies recognize the connection between an organization's effectiveness and an individual's ability and willingness to: • meet customer needs at the initial contact; e.g., make a sale, provide information • resolve customer concerns, if a problem arises • recommend improvements. These competencies also relate to the actual creation of a product. They apply to every type of production, from the creation of an individual piece of furniture to working on the line of a large manufacturing plant.
Ensuring Quality	
Task Management	These competencies relate to the meeting of expectations. Customers expect to receive quality goods and excellent service. Ensuring quality may also be a philosophy of life for some individuals as they strive to improve their skills and contributions on an ongoing basis.

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KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COMPONENT COURSES

EXPLORATION		ORIENTATION	PREPARATION
Junior High		**Senior High**	
Strand	*Units of Study Levels 1 2*		
Art/Design and Communication	• Practical Arts • Ceramics • Graphic Arts • Photography • Audio/Video	Art/Design 10-4	Art/Design 20-4	Art/Design 30-4
		Art/Media Communications 10-4	Art/Media Communications 20-4	Art/Media Communications 30-4
Auto Mechanics	• Two-stroke Engine • Four-stroke Engine • Basic Car Care and Maintenance	Auto Mechanics 10-4	Auto Mechanics 20-4	Auto Mechanics 30-4
			Auto Services 20-4	Auto Services 30-4
Business Services	• Communicating with Others • Searching for Information • Representing Information	Business Services 10-4	Logistics 20-4	Logistics 30-4
			Office Services 20-4	Office Services 30-4
			Sales and Service 20-4	Sales and Service 30-4
Construction: Building*	• Layout, Design and Drafting • Woods • Metals • Plastics • Electricity	Construction: Building 10-4**	Woodworking and Cabinetry 20-4	Woodworking and Cabinetry 30-4
			Wood Frame Construction 20-4	Wood Frame Construction 30-4
Construction: Metal Fabrication*		Construction: Metal Fabrication 10-4	Construction Systems 20-4	Construction Systems 30-4
			Metal Fabrication 20-4	Metal Fabrication 30-4
Cosmetology	N/A	Cosmetology 10-4	Cosmetology 20-4	Cosmetology 30-4
			Esthetics 20-4	Esthetics 30-4
Fabrics	• Basic Sewing	Fabrics 10-4	Fashion Textiles 20-4	Fashion Textiles 30-4
			Industrial Textiles 20-4	Industrial Textiles 30-4
Foods	• Basic Cooking • Snacks and Convenience Foods • Basic Baking	Foods 10-4	Commercial Cooking 20-4	Commercial Cooking 30-4
			Food Preparation and Service 20-4	Food Preparation and Service 30-4
Horticulture	• Soil Preparation, Plants and Planting • Turf/Grasses • Landscaping	Horticulture 10-4	Greenhouse and Nursery 20-4	Greenhouse and Nursery 30-4
			Landscaping 20-4	Landscaping and Maintenance 30-4
Human Care	• First Aid • Child Care (Noninfants)	Human Care 10-4	Child Care 20-4	Child Care 30-4
			Home Care 20-4	Home Care 30-4
Natural Resources	N/A	Natural Resources 10-4	Agriculture 20-4	Agriculture 30-4
			Forestry 20-4	Forestry 30-4
			Oil and Gas 20-4	Oil and Gas 30-4
Workplace Readiness	• Personal and Workplace Safety • Employment Exploration • Acquiring a Job • Keeping a Job	Workplace Readiness 10-4	Workplace Practicum 20-4	Workplace Practicum 30-4

* These strands have been replaced by the single strand Construction at the junior high school level.

** Students who successfully complete Construction: Building 10-4 may take Construction Systems 20-4.

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KNOWLEDGE AND EMPLOYABILITY
ART/DESIGN AND COMMUNICATION

COURSE SEQUENCE

Art/Design 10-4 →	**Art/Design 20-4** →	**Art/Design 30-4**
Workplace Readiness 10-4 →	**Workplace Practicum 20-4** →	**Workplace Practicum 30-4**

Art/Media Communications 10-4 →	**Art/Media Communications 20-4** →	**Art/Media Communications 30-4**
Workplace Readiness 10-4 →	**Workplace Practicum 20-4** →	**Workplace Practicum 30-4**

Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Art/Design and Art/Media Communications courses are designed to teach occupational knowledge and skills for entry-level positions in art, design and media communications by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Art/Design 10-4 provides an understanding of, and an opportunity for students to practise, techniques and the effective use of media and equipment. These skills will enable students to illustrate visual solutions to situations they encounter in any career field.
- Art/Design 10-4 provides a basis for, and an introduction to, Art/Design 20-4 and 30-4.
- Art/Design 20-4 and 30-4 focus on the practical applications of art in the working world.
- Art/Media Communications 10-4 provides a basis for, and an introduction to, Art/Media Communications 20-4 and 30-4.
- Art/Media Communications 20-4 and 30-4 focus on computer-related design projects and animation.
- Students interested in art, design and media communications should be encouraged to take both courses at the 10, 20 and 30 levels.

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- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

Within each sequence, the 10-level course is a prerequisite for the 20-level course and the 20-level course is a prerequisite for the 30-level course.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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ART/DESIGN 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within an art and design career environment. • Students will develop safe workplace practices and procedures. • Students will identify the elements and principles of design. • Students will identify and demonstrate techniques to produce 2-D projects. • Students will identify and demonstrate techniques to produce 3-D projects.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within an art and design career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the laboratory area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during construction procedures; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions

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- identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
- demonstrate proper body position while at a work station
- maintain a safe and clean work area
- identify and practise the safe use of electrical equipment

- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will identify the elements and principles of design.

Elements and Principles of Design

Students will:

- define the elements and principles of design and their applications
- demonstrate effective uses of the elements and principles of design in a visual communication
- design solutions to visual problems using personal experiences and abilities
- recognize elements and principles of design in published communications, designs and artworks
- apply techniques used in previously published communications to create original artworks
- identify a message communicated by visual tools; e.g.,
  - interpret messages from visual images or objects
  - analyze visual communication using criteria derived from the elements and principles of design
- recognize that all elements of a design change depending on viewpoint
- identify the positive and negative spatial relationships of a design or object
- arrange various images to compose attractive and effective visual communications.

Students will identify and demonstrate techniques to produce 2-D projects.

2-D Media and Techniques

Drawing

Students will:

- recognize the basic uses of various types of lines to communicate forms, textures and value
- identify various drawing media and their applications
- recognize that all forms are made up of various combinations of basic shapes
- demonstrate the use of shading to show 3-D forms, with or without a light source to create shadows
- demonstrate the ability to draw an object using oblique, isometric and point systems of perspective
- recognize the principles of design used to compose images on a page
- identify the relationship between the scale and proportion of an object and its surrounding environment

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- identify the basic proportion of human features
- demonstrate the ability to depict humans from varying viewpoints and to depict humans performing varying actions.

Using Colour

Students will:

- recognize the principles of the colour wheel
- understand that colour may be used to communicate messages and moods
- identify various media and their technical use to portray objects in colour
- demonstrate the ability to use various coloured media and tools effectively
- demonstrate the application of colour to show form, texture and effects of light in depicting objects and/or environments
- recognize the various uses of colour in industrial design and advertising
- demonstrate how the effective representation of ideas is enhanced by the use of colour.

Students will identify and demonstrate techniques to produce 3-D projects.

3-D Media and Techniques

Purpose of Sculpture

Students will:

- identify that sculptural or 3-D forms may be used to represent ideas so that all views may be seen
- understand the four main methods of creating 3-D forms; e.g.,
  - addition
  - subtraction (carving)
  - casting
  - assemblages of mixed media
- demonstrate the ability to use media and tools effectively and safely
- identify that form usually follows function
- recognize that scale and proportion need to be believable when portraying ideas in three dimensions
- demonstrate the ability to design a space or object; e.g.,
  - build a model using appropriate materials
  - document the process with drawings and photographs for a personal portfolio
  - demonstrate creative thinking to complete a task.

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Malleable Sculpture

Students will:

- identify various materials that may be manipulated to create a form
- demonstrate and practise how to make objects from clay or clay-like media, using various techniques; e.g.,
  - coil
  - slab
  - pinch
  - mould
  - potter's wheel
- recognize the function of these objects in their everyday lives
- identify the aesthetic elements that make a functional object attractive
- demonstrate the ability to translate a 2-D plan or idea into a 3-D form
- understand the processes of finishing 3-D forms to safely suit their function(s)
- choose the best technology to create forms
- describe and practise the safety precautions associated with working around ceramic equipment and materials
- demonstrate proper maintenance procedures for tools, equipment and machinery.

Nonmalleable Sculpture

Students will:

- identify the limitations of working with nonmalleable media
- recognize the proper effective joining techniques needed to create a safe structure or form
- identify the effective finishing methods of various media
- demonstrate the ability to transfer their own ideas from a 2-D plan or drawing into a 3-D form that fulfills a function or presents a solution to a problem
- demonstrate the use of safety equipment and conditions required by each medium and its technology
- document the steps and processes of production for the sculptural form.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

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Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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ART/DESIGN 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will develop effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an art and design career environment. • Students will demonstrate safe workplace practices and procedures. • Students will identify the elements and process of design. • Students will apply the elements of design to visual graphics. • Students will apply the elements of design to the built environment. • Students will apply the elements of design to various products. • Students will apply the elements of design to create articles of clothing (optional).
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an art and design career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- recognize that the arts industry represents one of Canada's major sources of employment or vocational opportunities and recognize that opportunities will continue to grow as emerging technologies develop
- identify various career paths available to designers and people skilled in art
- explore the marketing, displaying and advertising of design products.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- follow proper procedures when reporting hardware/software problems
- demonstrate safety and proper ergonomic conditions while using the computer
- identify potential safety hazards at work and at home; e.g.,
  - building security
  - property protection
  - window security
  - fire protection
- demonstrate adaptability to avoid/correct possible workplace hazards; e.g.,
  - workplace temperature
  - noise
  - computer glare
  - lighting
  - posture/wrists
  - lifting/moving products.

Students will identify the elements and process of design.

Elements and Process of Design

Orientation

Students will:

- identify the components of a professional design portfolio
- label diagrams using recognized universal standards of production relevant to a specific area of design
- describe how a design fulfills its purpose; e.g., meeting a human need or ecological need

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- identify why ergonomics is important when designing products
- identify and critique the values underlying the intentions, design, manufacture and consequences of any technology
- identify the relationship between scale and proportion
- identify the seven elements and seven principles of art and design and how they affect the design of an object, environment or communication/advertisement
- identify opportunities to combine various technological tools to enhance the presentation of design proposals
- identify the relationships, in each type of design, among history, technology and demand.

Foundational Skills

Students will:

- interpret and use appropriate universal symbols in design plans
- measure and record data accurately
- demonstrate the ability to produce neat design ideas that are easy to read
- interpret information from various sources to evaluate a design
- estimate the probability of successful application of a design
- identify the target audience for the use of the design
- recognize how the use of elements and principles of art and design can be interpreted by people using the design
- recognize that changes in, and adaptations and combinations of, designs are a part of the design process.

Design Process

Students will:

- identify the six steps of the design process; i.e.,
  - the brief
  - research
  - idea generation
  - test
  - final solution
  - evaluation
- identify the relationship between design and the four phases of technology; i.e.,
  - intention at its conception (function)
  - its design (form)
  - its manufacture (developing the product)
  - its consequences
- describe the three main areas of design; i.e.,
  - graphics/visual communication
  - product
  - the built environment.

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Students will apply the elements of design to visual graphics.

Graphics – Visual Communication

Students will:

- develop an awareness of the various graphic arts used to convey information
- find examples of various layout styles and explain their purpose in graphic design
- recognize that the use of colour, typography style, layout and other elements and principles of design affect the message conveyed to the target audience
- demonstrate the ability to use typography effectively
- demonstrate the ability to combine text and images using effective composition techniques
- demonstrate the ability to portray the final solution in an attractive and professional manner
- use various technologies to execute and/or enhance an original design.

Students will apply the elements of design to the built environment.

The Built Environment

Architectural Design

Students will:

- use basic blueprints of a simple building to interpret real dimensions and appearance
- demonstrate the use of universal symbols in an original design or a technical illustration of a plan
- create architectural plans to fulfill a brief
- use drawing materials effectively and neatly
- follow a standard design format to present a personal portfolio
- evaluate the final solution based on the following:
  - whether form fits the function
  - the ergonomics of design
  - environmental concerns
  - aesthetics
  - the elements and principles of design
- demonstrate the ability to illustrate various views of a building; e.g., use systematic solutions to interpret these views—perspective, oblique views, isometric views, expanded views, orthographic views
- combine various architectural styles to create an original solution to the brief
- use various media to achieve the most effective depiction of the final solution
- create a 3-D model of the architectural (or built) design, using scaled dimensions from existing or original plans.

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Landscape/Exterior Design

Students will:

- demonstrate the use of scale and proportion
- analyze examples of various types of landscape design, considering space, texture, colour, materials, mood and functional ergonomic aspects
- insert architectural design symbols into original designs to represent materials
- use various media and techniques to effectively represent the final solution
- critique the final solution using criteria from the brief.

Students will apply the elements of design to various products.

Product Design

Students will:

- create a concept to improve the design of an existing product; e.g., reverse engineering
- use ergonomic considerations and environmental awareness in an original design
- explain the design process
- use various media and techniques to present the final solution
- recognize the psychological effects of colour and imagery in the appearance of a product
- self-evaluate an original design and critique other designs constructively
- demonstrate an understanding of, and the ability to use, the elements and principles of design.

Students will apply the elements of design to create articles of clothing (optional).

Clothing Design (Optional)

Students will:

- demonstrate the ability to draw the human form using correct proportions
- demonstrate the ability to represent the human form in action or performing activities realistically; e.g.,
  - collect examples of people in various activities
  - analyze their positions using principles of proportion
- recognize that colour can be interpreted in a variety of ways
- recognize the idea of a uniform as identifying groups of people; e.g., tribes, cliques, teams, students, age
- demonstrate the ability to create an original clothing design that fulfills the criteria of the brief
- use various techniques and media to illustrate the final solution from at least two viewpoints.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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ART/DESIGN 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an art and design career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use graphics to communicate a message. • Students will develop an understanding of reading and creating blueprints. • Students will demonstrate the ability to design various products. • Students will demonstrate the ability to design articles of clothing (optional).
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an art and design career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- develop a digital portfolio of completed work/projects
- develop the ability to work independently and as part of a design team to complete a project
- understand the importance and existence of timelines in the fulfillment of commercial contracts.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use graphics to communicate a message.

Graphic Communication

Orientation

Students will:

- identify the four types of graphics that are used to communicate a message; i.e.,
  - environmental: for specific interior or exterior environments
  - informative: to visually present data
  - illustrative: to give visual forms to a text
  - promotional: to advertise in a mass media/consumer society
- recognize that layout is the organization of visual elements and structure is the arrangement of pieces of information.

Brief

Students will:

- identify the needs of the target audience
- identify the purpose of the communication
- create a visual communication that shows a process, location and analysis of data or imparts information to a target audience, using any media format that best illustrates the message.

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Research

Students will:

- identify the type of graphic needed to communicate the message
- identify various technologies that may be used commercially to best illustrate the ideas of the designer.

Ideas

Students will:

- depict their own characteristics or areas of interest by creating a personal logo, including a pictograph
- identify a company or individual by designing a business card, letterhead and other promotional materials
- illustrate an aspect or segment of a text in either a 2-D or a 3-D format; e.g.,
  - design a product container and label, using an original or adapted idea
  - produce an advertisement for a type of product or an event; e.g., poster, video commercial, multimedia production or 3-D model
  - illustrate a design for an interior or exterior space to identify a display unit or concept.

Test

Students will:

- examine each idea for potential problems
- suggest improvements or adaptations based on feedback
- choose the best idea.

Final Solution

Students will:

- present all solutions to a brief, using an established format of headings, bordered pages and title boxes
- demonstrate an awareness of ergonomic, environmental, social and legal limitations in all solutions.

Evaluation

Students will:

evaluate their own and others' designs, using elements and principles of design as the basis for the critique; e.g., suggest various adaptations and alterations that could improve the illustrated final solution.

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Students will develop an understanding of reading and creating blueprints.

The Built Environment

Orientation

Students will:

- discover that the variety of architectural structures depends upon:
  - climate
  - available materials
  - technology
  - social and economic structures of society
  - present standards of fashion
- identify standard symbols used to indicate the features of a structure on a blueprint or plan
- identify how use of the elements and principles of design affect the appearance and function of an architectural design
- recognize that function may dictate form in some structures
- recognize the difference between the functional components and decorative elements of a structure
- identify environmental considerations when designing a structure.

Brief

Students will:

- identify the purpose of the structure
- identify the potential uses of the space
- consider the location and any environmental aspects.

Research

Students will:

- identify various structures that match the brief
- analyze each structure for form, using the elements and principles of design
- identify any historical or technological trends that influence the design
- critique each structure, using the criteria established in the brief.

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Ideas

Students will:

- decide on a shape for a structure
- list the rooms contained within the structure and their functions
- arrange criteria in a diagram; e.g.,
  - divide the structure into areas
  - illustrate ideas and scale for effective usage
  - indicate features like walls, windows, doors, walkways and other structural features
  - label the diagram, explaining technical and structural considerations as necessary
  - suggest possible materials and colours to be integrated into the design.

Test

Students will:

- examine each idea for potential problems
- suggest improvements or adaptations based on feedback
- choose the best idea.

Final Solution

Students will:

- present the final solution in technical graphics and coded diagrams; e.g.,
  - make use of scale and proportion
  - use accepted blueprinting techniques and symbols for walls, windows, doors
  - present all views; i.e.,
    - floor plan
    - elevated views
    - axonometric 3-D version using two-point oblique or isomeric perspective
  - indicate texture by graphically describing the materials used
  - enhance the drawing by using colour
  - incorporate, when available, any media or computer-aided depictions
  - make a 3-D model to scale, if applicable.

Evaluation

Students will:

critique the design by referring back to the brief and suggesting any alterations or improvements; e.g., present the design to someone in the industry for feedback.

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Students will demonstrate the ability to design various products.

Product Design

Orientation

Students will:

- identify the physical characteristics of a desired product
- recognize the technical and mechanical requirements of a defined product
- identify the use of the materials required to produce a designed product
- identify the methods of illustrating products, including universal symbols and systems of technical graphic illustration
- identify the media that may be used to simulate materials or textures of a product.

Brief

Students will:

- design a product to be used for a specific stated purpose; e.g.,
  - consider ergonomics, environmental effects and the social characteristics of the target audience
  - render a 2-D, multiview illustration, using the most effective media, to indicate materials and mechanical functions.

Research

Students will:

- collect examples of similar products that already exist and would fulfill the criteria of the brief
- analyze each product example for form and function, using as benchmarks the elements and principles of design, materials used and the level of success in satisfying the needs of the target audience
- discuss historical and technological trends that have influenced their designs
- use charts, diagrams and pictures of the products, as well as text, to examine examples of existing products
- visit commercial sites that market product examples and document their findings.

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Ideas

Students will:

- brainstorm how adaptations and combinations of features could be used to invent an original design for a product and display their findings as a list or an idea web
- choose ideas to work with
- describe ideas using text and sketches of how the product would look and function
- evaluate each idea for form and function, considering scale, ergonomics, materials and estimated cost of production and purchase.

Test

Students will:

- choose the best idea
- suggest improvements and adaptations to make the design more effective or versatile
- illustrate their idea using sketches that show various views.

Final Solution

Students will:

- present a final solution using technical graphics and coded diagrams, as well as illustrations that show at least three views; e.g., use any media that would best represent the appearance of the product
- produce a 3-D model.

Evaluation

Students will:

critique the success of their product design using the criteria stated in the brief; e.g., suggest changes or alterations that may improve the form and function of the design.

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Students will demonstrate the ability to design articles of clothing (optional).

Clothing Design (Optional)

Orientation

Students will:

- identify how the elements of clothing design may be used to:
  - enhance appearance
  - create illusion
  - identify a group of people
- identify the characteristics of quality clothing construction techniques
- recognize that the texture of a fabric is determined by how it is constructed and the type of thread or yarn used
- recognize that colours of clothing may communicate a message or mood
- recognize that the elements and principles of design are used as a basis to enhance the design of clothing and accessories
- recognize various types of machines that are used in the clothing industry
- identify safe-handling techniques for equipment used in the construction of garments
- identify basic human proportions that are used to illustrate a clothing design.

Brief

Students will:

- design an article of clothing, outfit or costume for a specific purpose and consider the function of the clothing when establishing the form of the design
- identify materials that suit the purpose of the garment.

Research

Students will:

- gather and display examples of clothing design; e.g.,
  - types of clothing
  - photographs from magazines or catalogues
  - sketches
- state how the form of the garment fits its function and indicate who would wear it
- display material swatches with labels to identify:
  - how they were made
  - what types of fibres were used in their manufacture
  - their functional aspects
  - where they might have been manufactured.

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Ideas

Students will:

- illustrate ideas based on the design and materials outlined in the brief; e.g.,
  - use descriptive labelling, simulated textures and experimental colours to clarify ideas
  - use believable or realistic human proportions and features to illustrate ideas.

Test

Students will:

- comment on the limitations of the design ideas
- illustrate various views of the item using a 3-D form
- experiment with various elements of design; e.g., colour, texture, pattern, emphasis, shape
- choose the best idea.

Final Solution

Students will:

- create an extended series of drawings of their final solution
- display the outfit from at least three views; e.g.,
  - provide written or oral descriptive details of how the form fits the function
  - use any media or technology that best illustrates their ideas
  - produce a prototype of the clothing, if facilities and technical skills are available.

Evaluation

Students will:

- critique how the final solution fits the brief; e.g., suggest any alterations that would improve the design.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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ART/MEDIA COMMUNICATIONS 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within an art and media communications career environment. • Students will develop safe workplace practices and procedures. • Students will identify the elements and principles of design. • Students will identify the procedures for taking pictures and video images. • Students will identify graphic arts applications and processes.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.	**Lifelong Learning** *Students will:* • identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation • set learning goals and identify how formal/informal learning can help them achieve goals • develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will develop an ability to manage change effectively.	**Adapting to Change** *Students will:* • identify available support resources and assess potential barriers • prepare an action plan to proactively respond to a particular change or challenge.
Students will explore and discover personal aptitudes and interests related to occupational opportunities.	**Career Development** *Students will:* • create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options • identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site • describe how work contributes to individual goals • explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within an art and media communications career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the laboratory area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during procedures; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions

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- identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
- demonstrate proper body position while at a work station
- maintain a safe and clean work area
- identify and practise the safe use of electrical equipment

- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- be aware of safety aspects associated with the materials and tools used in artistic activities.

Students will identify the elements and principles of design.

Elements and Principles of Design

Students will:

- define the elements and principles of design and their applications
- demonstrate effective uses of the elements and principles of design in a visual communication
- recognize elements and principles of design in published communications, designs and artworks
- apply techniques used in previously published communications to create original artworks
- identify a message communicated by visual tools; e.g.,
  - interpret messages from visual images or objects
  - analyze visual communication using criteria derived from the elements and principles of design
- recognize that all elements of a design change depending on viewpoint
- identify the positive and negative spatial relationships of a design or object
- arrange various images to compose attractive and effective visual communications
- design solutions to visual problems using personal experiences and abilities.

Students will identify the procedures for taking pictures and video images.

Photography and Video

Photography

Students will:

- identify the basic camera parts and their functions
- identify the various applications of photography
- identify the rules of effective composition and how they affect the message
- label, analyze and interpret existing published photographs, focusing on:
  - composition
  - focal points
  - elements and principles of design
  - communicated messages

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- recognize the importance of balancing positive and negative space in a photographic image and construct a design to experiment with positive and negative spatial balances
- identify the potential social and legal issues involved in capturing and publishing images; e.g.,
  - Freedom of Information and Protection of Privacy (FOIP)
  - copyright
  - cultural restrictions
  - accepted good taste
- identify the process of using black-and-white film development to complete photographs on a chosen theme
- identify safety measures to ensure personal risk is minimized while using photographic tools, equipment and materials
- recognize that technology continues to advance the methodology of image production
- display photographs in an effective and attractive manner.

Digital Photography

Students will:

- identify digital image editing software and its uses
- identify different aspects of digital cameras and their functions
- understand the basic theory of digital photography in order to frame a picture
- identify the process of using digital imagery to develop an image; e.g.,
  - use the digital camera to create a series of photographs
  - communicate an intended message or story
  - experiment with video imaging and editing processes
- recognize that all images may be altered using various technical processes
- identify the different digital image formats
- choose the best format to use when saving/storing digital pictures
- demonstrate effective digital capture techniques, effective storage of digital images and the composition of a multimedia presentation of digital images.

Video (Digital)

Students will:

- identify the different components of a video camera and their functions
- identify different video editing software and their uses
- demonstrate safe and effective use of a video camera to record a project
- combine digital still pictures and digital video into a single project
- understand the software and hardware requirements for capturing, storing, editing and exporting video
- understand the different video formats and compression tools and use video editing software/hardware to export video to another format.

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Students will identify graphic arts applications and processes.

Graphic Arts

Design Process

Students will:

- identify the six steps of the design process; i.e.,
  - the brief
  - research
  - idea generation
  - test
  - final solution
  - evaluation
- recognize the effects of various typography styles
- identify the use of pictographs as universal symbols
- identify the geometric tools used to illustrate final solutions to the design brief
- use geometric tools to illustrate various views of the final solution
- identify and use various computer software programs and hardware to execute or enhance ideas and to communicate and publish intended messages or solutions to the brief
- identify various layout formats and their uses and develop and use the most effective layout formats to fulfill the brief
- identify various techniques used to publish original design ideas
- collect and analyze commercial art forms
- construct a logo or advertisement using the criteria stated in the brief
- identify various forms of graphic communication used to summarize or present statistics
- adapt an existing design to invent an original solution
- demonstrate the ability to use rendering techniques to indicate surface texture and form of the final solution.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

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Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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ART/MEDIA COMMUNICATIONS 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an art and media communications career environment. • Students will demonstrate safe workplace practices and procedures. • Students will identify the procedures for producing digital images. • Students will identify the procedures for producing graphic images. • Students will demonstrate the design skills required to create promotional products. • Students will identify the applications of multimedia projects.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an art and media communications career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- recognize that the art and media communications industry represents one of Canada's major sources of employment and vocational opportunities and recognize that opportunities will continue to grow as emerging technologies develop
- identify various career paths available to designers and people skilled in art
- explore the marketing, displaying and advertising of design products; e.g., locate local businesses that design and produce the type of work under discussion
- demonstrate knowledge of the diversity of applications and tools available in the industry.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate adaptability to avoid/correct possible workplace hazards; e.g.,
  - workplace temperature
  - noise
  - computer glare
  - lighting
  - posture/wrists
  - lifting/moving products
- identify the correct procedures for addressing injuries and identify related documentation
- identify the consequences of alcohol and drug use on the worker and the workplace
- develop a safe and clean work area and an ergonomic work station and follow all safety protocols.

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Students will identify the procedures for producing digital images.

Digital Imagery

Students will:

- understand the importance of proper posture and ergonomic techniques
- demonstrate the safe and effective use of digital cameras
- identify various digital image formats and their differences and similarities
- identify computer applications used to edit images
- identify defects in a digital image
- demonstrate the use of appropriate software to correct image defects
- demonstrate the ability to use appropriate hardware and software when acquiring a digital image
- demonstrate how to organize and store digital images on the computer
- create an organized portfolio of their digital images.

Students will identify the procedures for producing graphic images.

Digital Graphics

2-D/3-D Images

Students will:

- identify the differences between 2-D and 3-D images
- differentiate between vector and bitmap graphics
- create a 2-D vector and bitmap graphic using lines and objects
- identify the properties of composite images
- use appropriate software to create a 2-D and a 3-D composite image
- identify various software applications for use in creating 2-D and 3-D graphics
- identify software tools used to manipulate graphics.

Typography

Students will:

- understand the appropriate use of typography and how to integrate typography into graphics
- produce a composite image that integrates graphics and typography.

Students will demonstrate the design skills required to create promotional products.

Promotional Design

Students will:

- recognize the importance of 2-D and 3-D digital graphics in the promotion of a product
- identify the types of promotion that apply to digital graphics design; e.g., business cards, posters, signs
- display an understanding of the properties of different promotional products
- identify the target audience
- use knowledge and skills to create, using appropriate software, a variety of promotional products for a specific target audience
- list and define promotional vocabulary
- describe appropriate layout procedures for effective marketing.

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Students will identify the applications of multimedia projects.	**Multimedia Production** *Students will:* • develop an understanding of multimedia and its uses • identify various forms of interactive multimedia applications; e.g., – Web design – CD/DVD authoring • identify appropriate software and hardware for developing multimedia projects; e.g., understand that multimedia software can be interchangeable and can merge with other software applications • select an appropriate multimedia application for a specific project • create an interactive multimedia project using appropriate hardware and software • identify the techniques and equipment used in burning a CD/DVD.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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ART/MEDIA COMMUNICATIONS 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an art and media communications career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate the ability to plan and produce a video. • Students will demonstrate the procedures for creating a 3-D model and animation.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an art and media communications career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will demonstrate the ability to plan and produce a video.

Video Production

Storyboards

Students will:

- identify the correct process for creating a video production
- create a 2-D storyboard
- develop a concept for a video production
- understand the importance of alternating images during development; e.g.,
  - demonstrate the use of varied camera angles and pan and zoom effects
  - demonstrate differences in lighting for each scene
- understand the need for smooth transitions from one scene to the next
- organize storyboard images into a coherent sequence of events
- present a completed storyboard.

Scripts and Dialogue

Students will:

- identify the important issues in developing dialogue; e.g., appropriate language usage, subtitles
- create and proofread a script for dialogue
- identify the importance of editing dialogue to create an understandable script
- present the script for final editing.

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Location Scouting

Students will:

- research possible locations for filming
- use a created storyboard to decide what locations may be required
- use a digital camera to scout different location possibilities; e.g.,
  - identify the different positive and negative aspects of each location
  - select the best location to film
- organize the order of locations for filming
- shoot all scenes at a specific location.

Casting

Students will:

- understand the requirements of casting for a video production
- recognize that different productions have different casting needs
- identify the casting needs for the particular production
- select individuals appropriate to the production and assign them roles and scripts.

Production

Students will:

- demonstrate safe and responsible use of audiovisual equipment
- identify various forms of finished video productions
- select the best format to use for different video purposes
- produce a short video project, including:
  - storyboards
  - scripts and dialogue
  - location scouting
  - casting
  - editing
- identify video-editing software and its uses
- demonstrate the use of video-editing software to finalize video production; e.g.,
  - manage transitions
  - add music and sound effects
  - add title and credit screens
  - identify various CD/DVD authoring software; e.g., apply knowledge of CD/DVD video authoring, using various methods of copying video.

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Students will demonstrate the procedures for creating a 3-D model and animation.

3-D Modelling and Animation

3-D Modelling

Students will:

- identify the uses of 3-D modelling
- understand that objects exist in three dimensions; i.e., length, width and depth
- identify different software applications used in the creation of 3-D animation; e.g., recognize that different applications are used for different forms of modelling
- select and use appropriate software to create a 3-D model
- define 3-D graphics
- define the terminology associated with 3-D modelling; e.g., model, scene, profile, object geometry, working plane, ground plane, orientation axis, object axis, eye point, look-at point and view distance
- identify specific toolbars, found in software applications, and their functions
- demonstrate the ability to access and use the built-in help function
- demonstrate how to explore a 3-D workspace; e.g., find and organize the elements of a scene
- understand the importance of scene composition; e.g.,
  - textures and mapping
  - lighting
  - landscapes
- understand various 3-D modelling techniques, including but not limited to:
  - Non-Uniform Rational B-Splines (NURBS)
  - polygon construction and polygon counts
- use the computer to accurately convert a 2-D image to a 2-D image in a 3-D environment
- demonstrate the ability to convert a 2-D concept into a 3-D computer graphic
- create a 3-D model.

3-D Animation and Rendering

Students will:

- define the terminology associated with 3-D animation and rendering; e.g., animation, frame, key frame, track, property, field, start time, end time, time zero, object filter, frames per second, animation and time value, cycle, ambient light, surface colour, luminosity, specular, distant light, intensity, negative lights, mapping and render
  - understand the uses of animation in various forms of multimedia; e.g., understand that 3-D animation can be integrated into other multimedia applications

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- identify specific hardware and software requirements for different forms of 3-D animation
- create lights and light a 3-D scene
- create and apply materials and textures to a 3-D model
- animate lights and materials within a 3-D scene
- create global effects for a 3-D scene
- animate a 3-D model
- customize and optimize 3-D objects for rendering and create a final render
- understand the various forms of animation output; e.g., select the best form of output file for animation
- create a still and an animated file.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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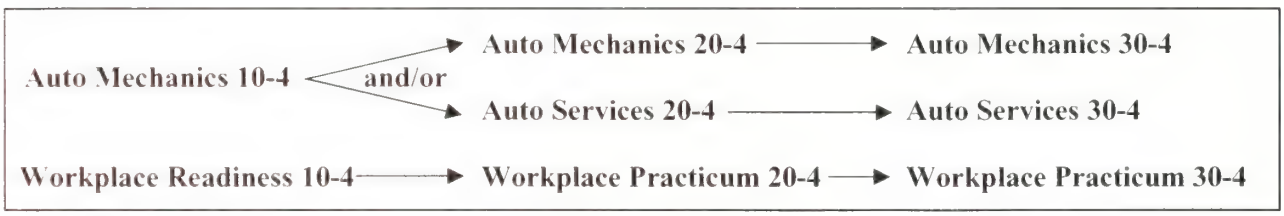
KNOWLEDGE AND EMPLOYABILITY
AUTO MECHANICS

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Auto Mechanics courses are designed to teach occupational knowledge and skills for entry-level positions in auto services and auto mechanics by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Auto Mechanics 10-4 provides a basis for, and an introduction to, Auto Mechanics 20-4 and Auto Services 20-4.
- Auto Mechanics 20-4 and 30-4 focus on steering, chassis and suspension repair.
- Auto Services 20-4 and 30-4 focus on lubrication, oil changes and other regular maintenance.
- Students interested in automotives should be encouraged to take both courses at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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AUTO MECHANICS 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within an auto mechanics career environment. • Students will develop safe workplace practices and procedures. • Students will be introduced to technology to develop a high-quality product or service. • Students will perform general vehicle maintenance. • Students will develop troubleshooting and problem-solving skills related to mechanical operations. • Students will evaluate the condition of a vehicle and identify the procedures for purchasing a vehicle (optional). • Students will develop safe driving habits (optional).
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.	**Self-development** *Students will:* • identify personal characteristics, strengths and talents and establish an action plan to build on them • recognize the use of strengths and talents to achieve goals • identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners • describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.
Students will identify and understand the risks associated with occupational activities.	**Risk Management** *Students will:* • identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace • identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic • identify a potential emergency situation and develop strategies for personal emergency responses • identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.	**Interpersonal Communication** *Students will:* • demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate language and body language • develop awareness of verbal and nonverbal communication strategies • improve their ability to communicate by working with others • communicate common goals and expectations to improve their team's ability to achieve goals • identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.	**Building Community** *Students will:* • identify commonly accepted courteous behaviour • assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour • identify the value of volunteering in community activities; e.g., charity work, community car wash.
Students will demonstrate positive effort and behaviour toward achieving a group's goals.	**Teamwork** *Students will:* • identify team goals • work independently and with others to support team goals; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within an auto mechanics career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and shop activities
  - treat the shop area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during auto mechanics procedures; e.g.,
  - identify safety device locations in the shop or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and shop conditions

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  - identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify important standards (codes) and governing bodies in the auto mechanics industry.

Students will be introduced to technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- explore new and emerging products and technological advances used in auto mechanics.

Tools and Equipment

Students will:

- identify equipment used on mechanics-related job sites; e.g.,
  - hoists
  - floor jacks
  - battery chargers
  - tire changers
  - vacuums
  - tire balancer
  - scan tools and multimeters
  - hand tools, including wrenches, screwdrivers, socket sets, files, chisels
  - power tools, including grinders, impact wrenches, drills
  - measuring tools, including micrometers, gauges, rulers and fluid level indicators
- identify and select available tools and equipment for the task; e.g., use, maintain and store, safely, tools and equipment.

Materials

Students will:

- identify materials used on mechanics-related job sites; e.g.,
  - hardware items; e.g., cotter pins, nuts, bolts, washers, snap rings, screws
  - fluids; e.g., oil, coolant, fuel, grease, additives, cleaners
- identify appropriate materials for various tasks and minimize the waste of materials through proper use
- read labels on chemical containers to check their uses and hazards
- handle and properly dispose of environmentally hazardous materials used in mechanics shops; e.g., read Material Safety Data Sheets (MSDS).

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Providing Service

Students will:

- identify client relationships or interactions within the field of auto mechanics
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- identify the importance of customer or client service to all businesses/industries
- identify professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will perform general vehicle maintenance.

General Vehicle Maintenance

Parts

Students will:

- list the major parts of a vehicle; e.g.,
  - body
  - frame
  - power train
  - suspension
  - steering
  - electrical
- demonstrate the correct procedures for charging, boosting and replacing an automobile battery
- identify the major parts of a vehicle through diagrams while using documentation.

Four-stroke Engine

Students will:

- identify the major systems of a four-stroke engine; e.g.,
  - four-stroke cycle
  - engine lubrication
  - cooling
  - fuel
  - exhaust
  - ignition.

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Under the Hood

Students will:

- identify and demonstrate the procedures required for regular automotive maintenance; e.g.,
  - oil change
  - chassis lubrication
  - transmission fluid change
  - coolant check
  - belt check and replacement
  - hose check and replacement.

Exterior

Students will:

- demonstrate the procedures required for regular automotive service maintenance; e.g.,
  - wash a car
  - lubricate hinges
  - replace wiper blades
  - change a fuse
  - adjust a headlight
  - check turn indicators and brake lights.

Tire Maintenance

Students will:

- identify and demonstrate the procedures required for regular tire maintenance; e.g.,
  - check tire pressure
  - replace a tire
  - balance a tire
  - check for and repair leaks
  - rotate tires.

Students will develop troubleshooting and problem-solving skills related to mechanical operations.

Troubleshooting and Problem Solving

Students will:

- discuss basic automotive problems based on various sounds, smells and visual clues; e.g.,
  - knocks, noises
  - overheating
  - lack of power
  - fluid leaks
  - starting problems
  - vibrations
  - electrical loss
- use knowledge of sounds, smells and visual clues to diagnose common automotive problems
- list causes of, and solutions to, problems based on their diagnoses.

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Students will evaluate the condition of a vehicle and identify the procedures for purchasing a vehicle (optional).

Vehicle Value Appraisal and Inspection Skills (optional)

Condition and Value of a Vehicle

Students will:

- identify the parts of a vehicle that can be tested with sight, instrument and road-test checks; e.g., engine, brakes, steering and body components
- calculate the value of a vehicle using the opinions of experienced individuals, comparative pricing, depreciation rates and Blue Book and Internet sources; e.g.,
  - repair estimates, wholesale reference guides, Alberta Motor Association
  - consideration of year, make, model, options, mileage, relative condition, popularity.

Buy or Sell

Students will:

- plan a strategy to buy or sell a vehicle
- identify the factors concerning choice of a vehicle, considering:
  - intended use
  - emotional appeal
  - available funds
  - consumer reports
  - performance versus economy
- describe the advantages and disadvantages of buying and selling vehicles privately, by auction, through a dealer or through leasing.

Legal/Safety Issues

Students will:

- identify safety concerns when dealing with unfamiliar vehicles
- identify the legal steps required to buy or sell a vehicle; e.g.,
  - develop the ability to check for possible write-offs, using provincial databases
  - examine an offer to purchase, a bill of sale, conditions of sale and possible liens.

Students will develop safe driving habits (optional).

Vehicle Operation (optional)

Driving

Students will:

- identify the skills required to operate a motor vehicle
- identify the basic components of the driver's side of a vehicle; e.g.,
  - safety brake
  - electrical components

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- instrument panel
- safety equipment
- side and rearview mirrors
- dashboard, hazard and other interior lights
- automatic and/or standard shifting

- develop the ability to correctly use the components of the vehicle necessary for operation.

Operator's Licence

Students will:

- acquire the basic operator knowledge required for a learner's licence
- read and study the *Alberta Vehicle Operator's Manual*
- develop the knowledge necessary to successfully pass the Alberta learner's licence test; e.g.,
  - the rules of the road
  - sign identification.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

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Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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AUTO MECHANICS 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an auto mechanics career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will demonstrate basic knowledge of the components used to construct an automobile. • Students will demonstrate an understanding of the operation and maintenance of an internal combustion engine. • Students will demonstrate an understanding of the function and operation of the braking system of an automobile.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an auto mechanics career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Mechanical Services

Students will:

- identify and locate service requirements for a specific make and model of vehicle as per the manufacturer's recommendations; e.g., owner's manual, manufacturer's specifications, aftermarket literature
- use, safely, hand and power tools and other equipment commonly used in mechanical repair and maintenance
- handle and properly dispose of environmentally hazardous materials used in mechanical repair and maintenance.

Technology Integration

Students will:

- identify new and emerging products and technological advances used in auto mechanics.

Providing Service

Students will:

- identify client relationships or interactions within the field of auto mechanics
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will demonstrate basic knowledge of the components used to construct an automobile.

Automobile Component Review
(Bumper to Bumper)

Students will:

- identify and describe fasteners associated with the automobile; e.g., bolts, studs, nuts, screws, pins, keys
- identify and describe the functions of the major parts of a vehicle body; e.g., bumpers, fenders, panels
- identify and describe the functions of the major parts of a vehicle frame (separate or integral frame), focusing on strength, stress, support points and damage
- identify and describe the function of the major parts of a vehicle's interior luxury systems; e.g., lights, sound, heat.

Students will demonstrate an understanding of the operation and maintenance of an internal combustion engine.

Engines and Their Systems

Students will:

- identify the basic components of a four-stroke engine
- identify and describe the operating principles of a four-stroke engine
- identify and describe the function of the fuel system; e.g., gasoline and diesel
- identify and describe the function of the lubrication system; e.g.,
  - demonstrate how to inspect an engine for oil leaks
  - demonstrate how to renew engine gaskets or seals, where necessary
  - demonstrate how to change the engine oil and filter
  - demonstrate how to service the Positive Crankcase Ventilation (PCV) valve and breather
- identify and describe the function of the cooling system; e.g.,
  - demonstrate how to inspect the condition of the engine coolant, hoses, belts, fan and radiator
  - demonstrate how to change or recondition the engine coolant and flush the cooling system, if necessary
  - demonstrate how to pressure-test the cooling system
  - demonstrate how to replace the thermostat, if necessary
- identify and describe the function of the air intake system, demonstrate how to replace the air filter, if required, and express cautions about cleaning
- identify and describe the function of the exhaust system; e.g.,
  - demonstrate how to inspect exhaust manifolds
  - demonstrate techniques for testing pipes, the catalytic converter, mufflers and hangers for structural integrity and repair, as required, including clamps, gaskets and sealers
  - identify and select proper exhaust servicing tools, including expanders, cutters and chisels
  - replace faulty exhaust parts as necessary, using a cutting torch as needed.

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Students will demonstrate an understanding of the function and operation of the braking system of an automobile.

Brakes

Brake Systems

(All work inspected by a certified technician)

Students will:

- demonstrate knowledge of brake systems
- identify the parts of a hydraulic brake drum system; e.g., compare the operating principles of duo-servo and non-servo brake systems
- identify the parts of a disc brake system; e.g., compare the operating principles of fixed, floating and sliding caliper braking systems
- identify the purpose and function of, and the testing procedure for, brake boosting; e.g., describe the operation of a combined disc and drum system
- identify the parts of an emergency brake system; e.g., compare the operating principles of an emergency brake system in disc and drum brake applications.

Repair

(All work inspected by a certified technician)

Students will:

- demonstrate the ability to service and repair brake systems; e.g.,
  - check the master cylinder fluid level
  - inspect drum and disc brake linings for wear
  - inspect the drum and rotor for service
  - adjust an emergency brake cable
  - machine a brake drum and rotor according to the manufacturer's specifications
  - remove and replace disc and drum brake shoes
  - remove and replace the master cylinder, wheel cylinder and caliper
  - replace a flexible brake hose
  - bleed and flush a brake system
  - demonstrate how to inspect and top up the brake fluid reservoir, handling brake fluids safely
  - demonstrate how to inspect and assess the wear characteristics of disc brake and drum brake components
  - demonstrate how to lubricate parking brake linkages.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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AUTO MECHANICS 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an auto mechanics career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate understanding of the composition and function of a drivetrain. • Students will demonstrate the ability to service a steering system. • Students will demonstrate the ability to service a suspension system.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige
- build personal career paths and networks
- analyze how work contributes to societal and economic needs and a sense of responsibility
- prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.

Self-development

Students will:

- continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals
- demonstrate entry-level self-presentation appropriate to the activity and role
- maintain a high standard of personal ethics when interacting with others.

Students will manage risks to achieve both personal and workplace goals.

Risk Management

Students will:

- maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace
- monitor success in reducing the impact of hazards on themselves and others
- demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace
- work with others to respond to emergencies
- take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an auto mechanics career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in the use of tools and equipment
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use technology to develop a high-quality product or service.

Products and Service

Mechanical Services

Students will:

- identify and locate service requirements for a specific make and model of vehicle as per the manufacturer's recommendations; e.g., owner's manual, manufacturer's specifications, aftermarket literature
- use, safely, hand and power tools and other equipment commonly used in mechanical repair and maintenance
- handle and properly dispose of environmentally hazardous materials used in mechanical repair and maintenance.

Technology Integration

Students will:

- use new and emerging products and technological advances in auto mechanics; e.g., examine the effects of current technological advances in the auto mechanics industry and explain the impact of current technology on the job descriptions of future auto mechanics trade workers.

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Providing Service

Students will:

- identify client relationships or interactions within the field of auto mechanics
- identify services needed, required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Drivetrain Repair

Students will demonstrate understanding of the composition and function of a drivetrain.

Drivetrain

Students will:

- explain the operation and power flow in various transmissions and transaxles
- describe drive axle operation and the components of four-wheel, front-wheel and rear-wheel drive vehicles
- describe the types of differential assemblies and explain the operation of full floating and semi-floating models
- describe the operation of a limited slip differential assembly.

Driveline

Students will:

- demonstrate driveline service procedures; e.g.,
  - remove and replace a clutch assembly
  - identify the serviceability of each part
  - adjust the linkage to a specified clearance
  - demonstrate how to inspect and replace fluids as required in transmissions, transaxle transfer cases and differential assemblies
  - demonstrate how to inspect and recommend service for constant velocity joints, seals, the driveshaft, drive axles and U-joints.

Replacement

Students will:

- demonstrate unit replacement; e.g.,
  - remove and replace a specified transmission
  - replace constant velocity joints
  - replace the differential assembly.

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Students will demonstrate the ability to service a steering system.

Steering Inspection and Repair

Operation

Students will:

- describe the operation of the common steering gear assemblies
- identify the common types of steering gears used to create the necessary mechanical advantages to overcome tire resistance; e.g., rack and pinion and steering boxes
- describe modern steering linkages
- describe the construction of a tie rod assembly and explain how it is built to accommodate vertical as well as horizontal movement
- explain the operation of four-wheel steering and outline the advantages of this type of steering over a conventional two-wheel system.

Service Steering System

(All work inspected by a certified technician)

Students will:

- check and adjust the power steering fluid level
- check the lubricant level in a manual steering gear and add the appropriate lubricant if necessary
- clean and inspect the steering linkage for wear and replace it if necessary
- inspect steering joints and bushings and replace them if necessary
- adjust a manual steering gear
- inspect and service a rack and pinion steering gear
- inspect and service power steering components.

Students will demonstrate the ability to service a suspension system.

Suspension Inspection and Repair

Operation

Students will:

- demonstrate an understanding of suspension systems
- describe the basic types of front and rear suspensions used on motor vehicles; e.g., short arm suspension, long arm suspension and MacPherson strut
- explain the advantage of using different types of suspensions
- list the positive and negative aspects of using coil, leaf, torsion, rubber biscuit and air springs
- list the basic types of shock absorbers and describe their operation, mounting techniques and methods of testing; e.g., compare gas shock absorbers to oil-filled shock absorbers.

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Service Suspension System
(All work inspected by a certified technician)

Students will:

- describe typical wheel bearing faults; e.g., bent cage, etching, overheating and worn seal
- inspect, repack or replace front or rear wheel bearings
- lubricate suspension joints where necessary
- inspect suspension components for damage and wear
- explain how ball joints are checked for wear
- remove and replace a:
  - shock absorber
  - coil spring
  - ball joint
  - strut
- identify the appropriate lifting and towing procedures relative to electronically controlled suspension systems
- discuss major steering suspension angles and perform wheel alignments
- adjust toe-in as necessary.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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AUTO SERVICES 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an auto services career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will develop a comprehensive evaluation of a motor vehicle. • Students will develop skills to work with customers in the automotive industry. • Students will apply electrical principles and concepts to test electrical circuits and components. • Students will identify and demonstrate procedures for installing a variety of electrical accessories.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.	**Self-development** *Students will:* • re-evaluate an action plan to develop strengths and talents • use strengths and talents to achieve personal goals • clarify acceptable and appropriate behaviours for specific activities and roles • act ethically in personal, community and workplace contexts and accept the consequences of their actions.
Students will understand risks and be accountable for their actions.	**Risk Management** *Students will:* • follow health and safety procedures; e.g., at home, at school, in the community and in the workplace • identify potential hazards, take corrective action and develop and practise action plans to ensure safety • practise personal emergency responses • assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.	**Interpersonal Communication** *Students will:* • assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate body language • assess verbal and nonverbal communication strategies • apply social norms to build specific relationships • demonstrate the ability to accept praise and/or criticism.
Students will demonstrate the ability to understand and work within the culture of a group.	**Building Community** *Students will:* • interact with others in a courteous manner • accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction • identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an auto services career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Auto Services

Students will:

- identify and locate service requirements for a specific make and model of vehicle as per the manufacturer's recommendations; e.g., owner's manual, manufacturer's specifications, aftermarket literature
- demonstrate general vehicle maintenance and service; e.g.,
  - oil, lubrication (lube) and filter changes
  - tire maintenance
  - fluids, coolant
  - battery, fuses
  - belts, hoses
  - headlights, wipers
  - general cleaning
- use, safely, hand and power tools and other equipment commonly used in mechanical service and maintenance
- identify and select available tools and equipment for the task
- maintain and store tools properly.

Materials

Students will:

- demonstrate the use of materials needed for general maintenance; e.g.,
  - hardware items; e.g., cotter pins, nuts, bolts, washers, snap rings, screws
  - fluids; e.g., oil, coolant, fuel, grease, additives, cleaners
- choose appropriate materials for various tasks and minimize waste through proper use
- read labels on chemical containers to check for uses and hazards
- handle and properly dispose of environmentally hazardous materials used in mechanics shops; e.g., reread Material Safety Data Sheets (MSDS).

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Technology Integration

Students will:

- identify new and emerging products and technological advances used in auto services.

Providing Service

Students will:

- identify client relationships or interactions within the field of auto services
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will develop a comprehensive evaluation of a motor vehicle.

Vehicle Inspection and Evaluation

Students will:

- complete an evaluation checklist; e.g., insurance inspection, out-of-province inspection guidelines, write-off inspection
- examine and report on the systems that require repair to determine the extent of reconditioning needed to return the systems to serviceability
- use a consumer guide to determine the vehicle characteristics that would contribute to market value; e.g., year, make, model, options, mileage, relative condition, emotional appeal and popularity
- list the probable and possible parts required for a complete repair using original equipment manufacturer (OEM), aftermarket and used parts
- use an accepted industry labour guide to calculate the correct labour charges for any required replacement parts, while considering all modifications to, or options for, the vehicle
- include in the repair estimate any costs, shop supplies, taxes or other charges that would contribute to the total estimated price
- identify the wholesale value of a subject vehicle using accepted wholesale reference guides; e.g., Red Book, Black Book, Blue Book and Internet resources
- calculate the market value of a subject vehicle by comparing pricing on three similar vehicles in the local marketplace.

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Students will develop skills to work with customers in the automotive industry.

Automotive Industry Customer Service Practices

Service Components

Students will:

- demonstrate the ability to locate the information needed to write work orders
- demonstrate the ability to work with customers to correctly complete work orders
- create, correctly, an estimate, using industry standard guidelines for labour costs
- explain repair costs to customers
- complete invoicing procedures.

Parts

Students will:

- locate parts suppliers and estimate costs of parts
- maintain a stockroom
- control inventory.

Students will apply electrical principles and concepts to test electrical circuits and components.

Electrical Systems

(Charging, Starting and Lights)

Students will:

- identify and describe series and parallel circuits in an automobile
- demonstrate the safe use of electrical tools and equipment
- demonstrate the correct procedures for measuring voltage, amperage and resistance
- demonstrate the correct procedure for testing and servicing a battery; e.g., load test, clean and service cables
- demonstrate the correct procedures for servicing automobile lamp bulbs, fuses and circuit breakers; e.g., headlamps, marker lamps, dashboard and interior lamps.

Students will identify and demonstrate procedures for installing a variety of electrical accessories.

Electrical Accessories Installation

Students will:

- identify and describe the correct procedure for replacing the components of an automobile sound system; e.g., controllers, amplifiers, speakers
- identify and describe the correct procedure for servicing power circuits in an automobile; e.g., electric windows, door locks, seats, mirrors
- remove and install interior trim panels as necessary to access power units, speakers and convenience options
- access and connect to power and convenience circuits
- service existing connections and correctly repair them as necessary.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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AUTO SERVICES 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an auto services career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will determine the condition of an engine. • Students will clean and detail a vehicle to entry-level standards.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.	**Interpersonal Communication** *Students will:* • communicate thoughts and feelings appropriately; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate body language • maintain a balance between speaking, listening and responding • work together to achieve goals • demonstrate the ability to deal constructively with conflict.
Students will promote equity in work and community endeavours.	**Building Community** *Students will:* • demonstrate and model courteous behaviour in daily interactions • demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction • assess their personal contribution to community growth.
Students will demonstrate the ability to complete tasks in a team environment.	**Teamwork** *Students will:* • assess the effectiveness of group and personal contributions; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an auto services career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use technology to develop a high-quality product or service.

Products and Service

Auto Services

Students will:

- identify and locate service requirements for a specific make and model of vehicle as per the manufacturer's recommendations; e.g., owner's manual, manufacturer's specifications, aftermarket literature
- perform general vehicle maintenance and service to the satisfaction of the customer; e.g.,
  - oil, lubrication (lube) and filter changes
  - tire maintenance
  - fluids, coolant
  - battery, fuses
  - belts, hoses
  - headlights, wipers
  - general cleaning
- use, safely, hand and power tools and other equipment commonly used in mechanical repair and maintenance
- identify and select available tools and equipment for the task
- maintain and store tools properly.

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Materials

Students will:

- demonstrate the use of materials needed for general maintenance; e.g.,
  - hardware items; e.g., cotter pins, nuts, bolts, washers, snap rings, screws
  - fluids; e.g., oil, coolant, fuel, grease, additives, cleaners
- choose appropriate materials for various tasks and minimize waste through proper use
- read labels on chemical containers to check for uses and hazards
- handle and properly dispose of environmentally hazardous materials used in mechanics shops; e.g., reread Material Safety Data Sheets (MSDS).

Technology Integration

Students will:

- use new and emerging products and technological advances needed in auto services; e.g., examine the effects of current technological advances in the auto services industry and explain the impact of current technology on the job descriptions of future auto services trade workers.

Providing Service

Students will:

- identify client relationships or interactions within the field of auto services
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will determine the condition of an engine.

Engine Diagnosis and Tune-up

Diagnosis

Students will:

- list possible engine problems based on the information provided; e.g., owner complaints
- describe, by listening to, observing and touching, a running and/or stopped engine, based on whether abnormalities exist; e.g., noises, blow-by, oil leaks, loose connections/parts, oil/coolant conditions, belts, hoses and filters

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- demonstrate diagnostic procedures; e.g.,
  - analyze the intake manifold vacuum
  - check the ignition timing
  - check for proper idle speeds
  - check the engine oil pressure
  - check cylinder compression readings
  - perform wet and dry tests
  - check exhaust emissions
- identify abnormalities in the vehicle, using gauges and lights, including self-diagnostics; e.g., scan tool
- use an engine analyzer and/or a computerized tester to describe the condition of various engine systems as per the capability of the test unit
- compile all information and generate a report for the customer outlining the defects found and necessary corrections.

Electrical Component Testing and Repair

Students will:

- demonstrate how to:
  - test fuel pump pressure and capacity
  - service fuel injectors
  - use diagnostic equipment to diagnose a problem
  - service spark plugs, wires, the distributor cap and the pick-up coil
  - check and adjust the ignition timing
  - operate the starter and determine if a problem exists; e.g., noises, drive engagement, speed
  - check the starter amperage draw and compare it with the manufacturer's specifications
  - check for fluctuations in the starter circuit voltage
  - test and replace a starter
  - service the battery and check its condition
  - do a visual check; e.g., of wires, connections, belt condition and tension
  - check the alternator output and voltage regulation and correct them as necessary
  - check the alternator for noise and vibration and service it as required
  - check for fluctuations in the charging circuit voltage and correct any faults
  - test and replace an alternator
  - diagnose computer-controlled systems and document faults.

Fuel System

Students will:

- demonstrate the ability to inspect and service the fuel system; e.g.,
  - inspect the fuel filter/strainer and replace it if necessary
  - inspect, visually, and test a typical fuel injection system
  - test the fuel pump pressure and capacity and repair or replace the pump if necessary.

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Students will clean and detail a vehicle to entry-level standards.

Detailing

Interior/Exterior

Students will:

- identify and describe the use of materials available to enhance the appearance of a vehicle
- identify and demonstrate the correct procedures to follow when applying cleaning, polishing and treatment agents to various surfaces; e.g., interior and exterior cleaning
- explain the value of using waxes to treat painted surfaces, including longevity and monetary implications; e.g., exterior protective coatings
- demonstrate the correct procedures to follow when cleaning and treating interior and exterior surfaces; e.g., paint, glass, vinyl, rubber and upholstery.

Engine Cleaning

Students will:

- demonstrate the correct cleaning and treatment of engine parts
- demonstrate the safe handling and application of volatile engine cleaners; e.g., engine shampoo
- demonstrate knowledge of engine-cleaning procedures and follow these procedures to prevent damage to electrical systems or other parts
- demonstrate knowledge of safety rules and procedures in the handling of dangerous cleaning agents and follow these rules and procedures.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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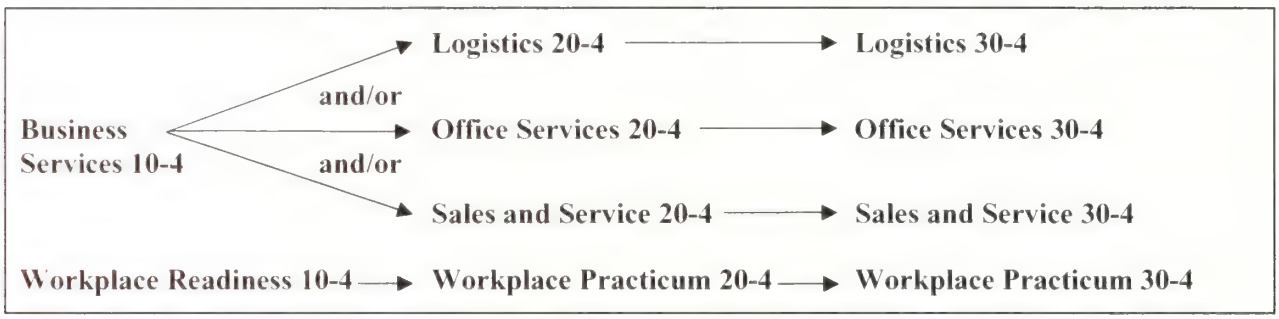
COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Business Services courses are designed to teach occupational knowledge and skills for entry-level positions in office services, sales and service and logistics by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Business Services 10-4 provides a basis for, and an introduction to, Logistics 20-4, Office Services 20-4 and Sales and Service 20-4.
- Logistics 20-4 and 30-4 focus on the delivery and transportation of goods.
- Office Services 20-4 and 30-4 focus on office operations and business strategies.
- Sales and Service 20-4 and 30-4 focus on service in the retail and hospitality fields.
- Students interested in business should be encouraged to take as many courses as possible at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes three sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for all of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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BUSINESS SERVICES 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a business services career environment. • Students will develop safe workplace practices and procedures. • Students will develop keyboarding, editing and formatting skills to modify and produce documents for business communications. • Students will use names and other important information that reflects content for filing purposes. • Students will develop effective research and customer relations skills. • Students will identify business operations and financial procedures. • Students will identify how goods are distributed and demonstrate shipping and receiving practices.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a business services career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the laboratory area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions

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  - identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize health and safety hazards associated with office, retail store and warehousing procedures.

Students will develop keyboarding, editing and formatting skills to modify and produce documents for business communications.

Work Station Operations

Keyboarding, Formatting and Editing

Students will:

- demonstrate effective keyboarding, using proper techniques
- organize a work station by setting up materials properly for effective use
- edit assignments properly; e.g., spell check, grammar
- use basic toolbars and pull-down menu functions
- format documents by using appropriate procedures, style manuals and electronic templates; e.g., letters, memorandums, reports
- compose messages, with attachments, in an e-mail system
- use software effectively by using shortcuts on a computer desktop; e.g., Ctrl + 2 to double-space
- justify margins and set fonts for a project appropriately
- prepare documents with page-setup operations
- prepare documents for printing
- apply proper etiquette when using technology to communicate
- create tables and columns, using specialized features
- apply graphics, fonts and borders to documents.

Students will use names and other important information that reflects content for filing purposes.

Planning and Organizing

Students will:

- identify the purpose of keeping records
- identify the basic methods of keeping records and storing information; e.g.,
  - diaries
  - notes
  - files
  - computer software
  - audiotapes/videotapes
- identify the components of a paper filing system
- use numeric, alphanumeric, alphabetic and Dewey decimal system filing procedures in appropriate settings

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- identify the components of an electronic filing system
- create file folders to efficiently open and save documents
- apply file management procedures; e.g.,
  - rename
  - move
  - delete
- manage several documents at the same time, using tools and features
- organize desktop software and files; e.g., icons
- use header and footer features in document preparation.

Students will develop effective research and customer relations skills.

Communication

Internet Use

Students will:

- identify and access e-mail
- use a number of search engines and Boolean language to obtain information quickly; e.g., " ", +
- analyze a variety of Web sites to identify common content and features
- research Web sites by using a variety of search strategies and search engines.

Presentations

Students will:

- choose appropriate software packages for reporting information; e.g., slide show software, word processing software, spreadsheet software
- proofread and edit documents for content and errors.

Providing Service

Students will:

- look at the situation from the perspective of the client
- determine the potential to resolve problems
- provide individual, personalized service to each client
- identify the expressed needs of the client
- use appropriate communication strategies.

Telecommunications

Students will:

- identify methods of transmitting information using telephone technology
- use proper procedures and etiquette when placing and receiving telephone calls
- record messages accurately and completely
- research contact information by using published and computerized directories
- ensure competent delivery of messages.

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Students will identify business operations and financial procedures.

Financial and Consumer Preparation

Students will:

- identify the various ways a business makes money
- describe the importance of accounting
- identify banking services within the community; e.g., loans, chequing and savings accounts, electronic operations
- practise the formatting of simple personal financial documents; e.g.,
  - identify the components of a balance sheet
  - prepare a personal balance sheet
  - identify the components of an income statement
  - prepare a personal income statement
  - prepare a personal budget
  - discuss a personal savings plan and why a savings plan is important
  - determine what personal savings plans are available
- use software features and tools in an effective manner
- identify simple financial terminology
- compare products and services; e.g.,
  - analyze the content and costs of products and services
  - define products and services within the community
- list and discuss the advantages and disadvantages of using credit
- compare interest rates on bank loans and other forms of credit
- describe how paycheque deductions affect a worker.

Students will identify how goods are distributed and demonstrate shipping and receiving practices.

Distribution

Modes of Transportation and Vehicles Used for Logistics

Students will:

- identify and describe the role of transportation in logistics
- explain the advantages and disadvantages of different vehicles and vessels used in modes of transportation; e.g., air, rail, roadway, sea, pipeline
- identify appropriate modes of transportation for various types of products and identify their specific requirements; e.g., refrigeration, speed, air ride, time, temperature and packing
- demonstrate the ability to use a map to:
  - identify specific locations
  - trace routes
  - measure distances
  - identify key features/symbols
  - estimate time.

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Packaging and Shipping Practices

Students will:

- identify and demonstrate efficient packing procedures; e.g.,
  - packaging
  - closing/securing
  - wrapping
  - taping
- list and describe the major types of packaging; e.g., carton, box, container
- demonstrate basic skills in shipment preparation, including:
  - weighing
  - labelling
- read, interpret and complete the appropriate documentation for the shipping of goods.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.	**Listening, Speaking, Reading and Writing** *Students will:* • read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals • identify a purpose for writing • print or write legibly, spell accurately and apply rules of grammar to construct text • listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.	**Problem Solving** *Students will:* • identify and define, and ask relevant questions to clarify, the problem • evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals

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- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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LOGISTICS 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a logistics career environment. • Students will demonstrate safe workplace practices and procedures. • Students will demonstrate proper packing procedures for various types of cargo and transportation. • Students will demonstrate efficient shipping and receiving procedures for warehouse storage. • Students will demonstrate effective inventory management and record-keeping procedures.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a logistics career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- identify a variety of occupations within warehousing and transportation
- identify licencing requirements for transporting goods in various vehicles.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)

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- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify the correct procedures for addressing injuries
- identify the consequences of alcohol and drug use on the worker and the workplace
- alert the instructor to unsafe conditions
- describe safe lifting procedures
- describe procedures for reporting an accident
- identify hazardous types of cargo.

Students will demonstrate proper packing procedures for various types of cargo and transportation.

Packing

Procedures

Students will:

- identify and demonstrate efficient packing procedures; e.g.,
  - packaging
  - closing and securing
  - wrapping
  - taping
  - labelling
  - weighing
- demonstrate the ability to relate the product to the packaging and the mode of transportation
- identify fragile products and the methods needed to secure their safe delivery
- list and describe the major types of packaging material; e.g.,
  - carton
  - box
  - container.

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Shipping

Students will:

- demonstrate basic skills in shipment preparation; e.g.,
  - packing
  - packaging
- read, interpret, select and complete appropriate documentation for the shipping of goods
- identify transportation modes and the benefits and drawbacks of each; e.g., cost, time, convenience.

Travel Preparation

Students will:

- explain the purpose of tracking systems
- demonstrate the ability to use:
  - tracking systems
  - two-way communication devices
  - global positioning systems (GPS)
- demonstrate the ability to use traditional and computerized maps to plan a route
- assist in planning and scheduling a route to meet a customer's needs
- explain the difference between a shipping manifest and a transportation manifest
- prepare a manifest
- describe the purpose of a logbook.

Students will demonstrate efficient shipping and receiving procedures for warehouse storage.

Shipping and Receiving

Warehousing

Students will:

- identify the role warehousing plays in the workplace
- identify symbols and labels used to identify products
- identify terminology for warehousing tools, equipment and materials
- identify and describe the function of storage containers; e.g.,
  - revolving shelves
  - racks
  - modular shelving
  - line storage
- identify bar-code labels
- identify content-care labels
- identify the safe mechanics of lifting, carrying and placing a load; e.g., use manpower or various equipment and machinery
- identify stacking patterns; e.g.,
  - blocks
  - row
  - brick
  - pinwheel.

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Goods

Students will:

- identify, define and describe types of storable goods; e.g.,
  - hazardous
  - packages
  - bulk
  - perishables
  - valuables
  - inflammables
- choose appropriate storage based on the product.

Forms and Documents

Students will:

- identify common warehouse forms used to monitor goods
- complete customer shipping orders and address shipments
- explain the purpose of and complete:
  - packing slips
  - invoices
  - shipping records
  - stock requisitions
  - back orders
  - claim forms
- identify the main areas of a purchase order; e.g.,
  - buyer
  - vendor
  - quantities
  - product descriptions
  - other information; e.g., comments, date, special order.

Students will demonstrate effective inventory management and record-keeping procedures.

Inventory Management

Shipping

Students will:

- identify the process and function of shipping
- identify and complete a shipping record document
- pack and ship an order
- file shipping orders.

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Receiving

Students will:

- identify receiving procedures
- identify the procedures for reporting stock; e.g.,
  - overages
  - damages
  - shortages
  - back orders
- complete a receiving document
- demonstrate the procedures to:
  - unpack received goods
  - check received goods
  - evaluate the quality of goods
  - report goods discrepancies
  - file shipping invoices.

Inventory

Students will:

- identify the purpose of inventories; e.g.,
  - identify methods for the taking of inventories
  - compile an inventory of goods
  - use a computer to complete an inventory of goods
- identify and explain the advantages, disadvantages and purposes of using stock-locator systems; e.g.,
  - random
  - fixed
  - manual
  - electronic
- demonstrate the ability to use stock-locator systems.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- create a product and/or deliver a service
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- design marketing and management practices for the product or service
- design a budget
- design a timeline, including dates of completion, with supervisor/instructor assistance
- use an appropriate timeline chart
- prepare a product for distribution; e.g.,
  - identify positive sales techniques
  - brainstorm and share information with classmates and the instructor
  - research sales techniques through the use of books, articles and the Internet
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate effective time management
- clean the work area when the task is completed.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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LOGISTICS 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a logistics career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate proper cargo-handling and documentation procedures. • Students will demonstrate entry-level knowledge and efficient practices of warehousing operations. • Students will demonstrate the effective stocking and inventory procedures required for entry-level employment in a parts warehouse.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.	**Interpersonal Communication** *Students will:* • communicate thoughts and feelings appropriately; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate body language • maintain a balance between speaking, listening and responding • work together to achieve goals • demonstrate the ability to deal constructively with conflict.
Students will promote equity in work and community endeavours.	**Building Community** *Students will:* • demonstrate and model courteous behaviour in daily interactions • demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction • assess their personal contribution to community growth.
Students will demonstrate the ability to complete tasks in a team environment.	**Teamwork** *Students will:* • assess the effectiveness of group and personal contributions; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a logistics career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- alert the instructor to unsafe conditions
- describe the information needed to complete an accident report
- identify standards for handling materials and equipment in a warehouse or stockroom, considering safety, security and sanitation
- describe and demonstrate safe lifting procedures
- identify types of hazardous cargo.

Students will demonstrate proper cargo-handling and documentation procedures.

Carriers

Students will:

- identify the function of carriers
- identify six carrier types; e.g.,
  - motor freight
  - parcel post
  - air freight
  - rail
  - couriers
  - waterway carriers
- identify various carrier companies for each type
- list the advantages and disadvantages of each carrier type
- identify local and Alberta carriers
- select suitable carriers for specific shipments
- identify and list key:
  - transportation regulations
  - weight restrictions
  - seasonal restrictions
  - jurisdictional restrictions and requirements

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- list licencing required to operate different vehicles and vessels; e.g., identify procedures for obtaining licences to operate various forms of transportation
- identify and describe the basic safety procedures, practices and standards that must be followed for each vehicle; e.g.,
  - on-highway
  - off-highway
  - air/sea freight
  - customer safety
- identify the procedures for loading and unloading cargo safely and efficiently; e.g.,
  - secure cargo, using blocking, bracing, packing, rope, cable, chains and strapping
  - demonstrate the procedures for using common cargo-handling equipment, including pallets, jacks, dollies, hand trucks, nets, slings, poles and other equipment
- verify the information on a bill of lading and properly record and report discrepancies and damage to the cargo.

Students will demonstrate entry-level knowledge and efficient practices of warehousing operations.

Warehousing Operations

Students will:

- identify and explain the purpose and relationship between the:
  - shipping area
  - receiving area
  - storage area
- identify and explain the purpose of different systems of warehousing; e.g.,
  - first-in-first-out (FIFO)
  - last-in-first-out (LIFO)
  - time-dated systems
  - non-time–dated systems
  - bulk materials–handling systems
  - general materials–handling procedures
- explain the advantages and disadvantages of using automated warehouse systems
- demonstrate the ability to safely use automated systems; e.g.,
  - conveyor systems
  - pickers
  - scaling/weighing devices
  - storage and retrieval systems

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- explain the purpose of palletizing items; e.g.,
  - warehouse storage
  - ease of handling
  - outgoing and incoming shipments
- identify and describe equipment and aids used to handle various material; e.g.,
  - forklifts
  - power lifts
  - power jacks
  - rollers
- demonstrate the safe operation and handling of equipment and goods.

Students will demonstrate the effective stocking and inventory procedures required for entry-level employment in a parts warehouse.

Parts Sales and Service

Students will:

- list major features of various stockrooms/warehouses; e.g.,
  - auto parts
  - machine parts
  - grain handling
  - fruits, vegetables
  - retail
  - dry goods
  - clothing
  - freight
- identify the importance of maintaining a constant stock of supplies
- demonstrate the procedures for ordering inventory
- identify various vendors for products
- care for and maintain a warehouse or stockroom as directed
- identify and describe management and care duties needed in a warehouse or stockroom
- identify and describe:
  - customer loyalty
  - repeat business
  - service
- demonstrate sales and customer relations techniques
- evaluate their own sales and service performance.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- create a product and/or deliver a service
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- design marketing and management practices for the product or service
- design a budget
- design a timeline and dates of completion, using an appropriate timeline chart, with supervisor/instructor assistance
- prepare for product or service sales; e.g.,
  - identify positive sales techniques
  - brainstorm and share information with classmates and the instructor
  - research sales techniques through the use of books, articles and the Internet
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate effective time management
- clean the work area when the task is completed.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- using metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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OFFICE SERVICES 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an office services career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will continue to develop keyboarding, editing and formatting skills to modify and produce documents for business communications. • Students will continue to develop organizational skills to facilitate an effective working environment. • Students will demonstrate communication procedures, using a variety of strategies.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an office services career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify potential safety hazards at the work placement and at home; e.g.,
  - building security
  - property protection
  - window security
  - fire protection
- demonstrate adaptability to avoid/correct possible workplace hazards; e.g.,
  - workplace temperature
  - noise
  - computer glare
  - lighting
  - posture/wrists
  - lifting/moving products
- identify the correct procedures for addressing and reporting injuries and identify related documentation
- identify the consequences of alcohol and drug use on the worker and the workplace
- develop a safe and clean work area and an ergonomic work station and follow all safety protocols
- follow proper procedure when reporting hardware/software problems
- use proper procedure for work station management and operations; e.g., place book bags underneath the desk and prepare work materials on the desk.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances in office services.

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Providing Service

Students will:

- identify client relationships or interactions within the field of office services
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will continue to develop keyboarding, editing and formatting skills to modify and produce documents for business communications.

Work Station Operations

Keyboarding

Students will:

- demonstrate an increased proficiency in keyboarding skills; e.g.,
  - use the numeric keypad
  - practise the typing of telephone numbers, postal codes and other alphanumeric material
  - practise the use of symbol keys in a variety of documents
  - create a baseline of words per minute (wpm).

Formatting

Students will:

- format multipage documents, with headers and custom footers, in a spreadsheet format
- create calendars, brochures and newsletters, using publisher software
- apply table and column features to appropriate documents
- use indents and tabs to create or format documents
- create a variety of charts, using a spreadsheet package; e.g., bar, line, pie, legends, title, series, *x*-axis, *y*-axis
- demonstrate and practise the use of a variety of bulleting and numbering formats used in document preparation
- use a variety of spacing settings within a document
- understand the various types of formats for correspondence; e.g., full block, modified block and semiblock letter styles
- compose memorandums and understand that guide words must be used; e.g., date, to, from, subject
- use the help menu to troubleshoot problems while using software
- prepare templates for efficient document preparation and prepare page-setup operations, tabs, spacing and indents
- format and attach pictures and/or other documentation to an e-mail and then send the message to a recipient.

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Editing

Students will:

- use spell-check and thesaurus functions when creating documents
- use editing marks when editing handwritten and text-only material
- identify and use all of the cursor buttons effectively and efficiently
- use shortcuts to edit documents; e.g., Ctrl + 2 for spacing.

Students will continue to develop organizational skills to facilitate an effective working environment.

Planning and Organizing

File Management

Students will:

- identify filing systems; e.g.,
  - alphabetic
  - numeric
  - subject
  - geographic
- use appropriate filing systems for information and data
- create appropriate electronic file folders for correspondence and reports; e.g.,
  - move files into folders, using the drag-and-drop technique
  - delete folders that are not in use
  - rename files and folders for future use and ensure files have specific names/dates/content so they are easy to locate
- arrange desktop icons for efficient use (e.g., horizontal, vertical or other arrangement) and create desktop icons of folders used on a regular basis (e.g., pictures folder)
- save and resave documents on a regular basis
- use headers and footers to identify documents
- demonstrate procedures for emptying the recycle bin.

Time Management

Students will:

- keep a record of daily activities
- familiarize themselves with the use and importance of a day planner; e.g., agenda, personal digital assistant (PDA)
- identify procedures for scheduling appointments
- list and describe common booking requirements; e.g.,
  - meetings
  - appointments
  - reservations
- demonstrate booking procedures.

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Students will demonstrate communication procedures, using a variety of strategies.

Communicating, Researching and Problem Solving

Interpersonal Communication

Students will:

- identify correct procedures for self-introduction
- demonstrate positive nonverbal communications
- identify the importance of eye contact
- listen attentively.

Telephone

Students will:

- identify procedures for using a telephone or cell phone
- identify and demonstrate proper telephone etiquette
- identify and demonstrate various telephone features; e.g.,
  - hold
  - conference call
  - headset
- identify and demonstrate the use of directory information
- take telephone messages that are clear and concise; e.g.,
  - include all information needed to record a meaningful message (date and time, the message, proper spelling of name, telephone number and initials of message taker)
  - repeat the message back to the caller to ensure clarity
- identify procedures for handling complaints
- discuss conflict management within an employee/employer or family situation and practise skills of negotiation.

Computer

Students will:

- compose reports, using the tools and features included in software
- compose résumés and covering letters, using the correct format and words that will inspire the reader
- compose, send and receive e-mail
- narrow a Web site search for information, using Boolean logic; e.g., and, or, " "
- read and scan information on several Web sites to obtain information and communicate results or findings
- conduct queries, using database fields and records
- identify Web pages that are appropriate and suitable for a task
- use appropriate features to create a simple Web page.

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Handling Mail

Students will:

- identify common procedures for handling mail; e.g., incoming, outgoing, stamping
- demonstrate sorting practices
- demonstrate an ability to determine and use postal codes
- identify business methods for folding letters and stuffing envelopes
- identify equipment and processes for determining postage rates.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- create a product and/or service
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate effective time management
- clean the work area when the task is completed.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading ad Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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OFFICE SERVICES 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an office services career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate, to entry-level standards, skills related to keyboarding, text editing and formatting. • Students will demonstrate organizational skills to facilitate an effective working environment. • Students will demonstrate effective communication strategies to collect and deliver information.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an office services career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances in office services; e.g., examine the effects of current technological advances in the field of office services and explain the impact of current technology on the job descriptions of future office services workers.

Providing Service

Students will:

- identify client relationships or interactions within the field of office services
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will demonstrate, to entry-level standards, skills related to keyboarding, text editing and formatting.

Keyboarding, Formatting and Text Editing

Keyboarding

Students will:

- develop speed and accuracy while creating a variety of materials; e.g.,
  - continue to use proper technique while keyboarding
  - assess the progress of timed writings and set goals to increase keyboarding skills.

Formatting

Students will:

- develop consistency in formatting a variety of assigned documents that are to be presented in a professional manner; e.g.,
  - compose documents, using the correct format
  - decide on styles for memorandums, letters and other business correspondence
- use established software templates and tools to assist in formatting documents
- continue to create records and fields, using established criteria and descriptions
- report data, using a variety of formats
- sort and query data, using established criteria.

Text Editing

Students will:

- continue to demonstrate, with increasing proficiency, editing and proofreading skills; e.g.,
  - find errors in documents and make the correct changes to spelling and grammar
  - use tools, features and shortcuts to create professional documents
  - analyze documents to make changes, additions and deletions
  - demonstrate progress in moving material within a document in an efficient manner.

Students will demonstrate organizational skills to facilitate an effective working environment.

Planning and Organizing

Records Management

Students will:

- demonstrate entry-level filing skills
- observe and describe filing systems used in:
  - schools
  - offices
  - shops
  - stores
- demonstrate effective processes for electronic filing.

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Time Management

Students will:

- use a day planner; e.g., agenda, personal digital assistants (PDA)
- demonstrate the ability to schedule appointments
- demonstrate booking procedures for various activities; e.g.,
  - hotel room
  - rental car
  - restaurants
- demonstrate the making of travel arrangements and prepare an itinerary.

Students will demonstrate effective communication strategies to collect and deliver information.

Communicating

Skill Development

Students will:

- analyze different media to further develop communication skills
- use and practise active listening skills; e.g., paraphrase, ask questions for clarification, display empathy
- demonstrate competent verbal, nonverbal and written communication skills
- interview others, conduct surveys and share a written and/or oral report
- practise communication skills in a variety of settings; e.g.,
  - use case studies to develop communication and reporting skills
  - brainstorm to produce ideas
  - develop teamwork when generating ideas on a topic
- critique communication skills in a positive manner; e.g., critique the work of another student and allow for further discussion and feedback from classmates, considering:
  - what they liked about the presentation
  - what areas could be improved.

Telephone

Students will:

- demonstrate entry-level knowledge of electronic communication devices
- demonstrate the ability to use the telephone; e.g., receive local calls and place local calls
- demonstrate correct telephone etiquette
- identify procedures for the use of emergency numbers.

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Computer

Students will:

- use software to design and develop presentations; e.g.,
  - prepare an electronic slide show on an assigned topic
  - design Web pages that can be published to the Internet or to an intranet by creating a suitable format or by using HTML and a predetermined format established by the software
- demonstrate effective use of e-mail.

Handling Mail

Students will:

- demonstrate entry-level skills when handling office mail
- use a stamp machine
- read a stamp machine meter
- prepare mail for delivery services; e.g.,
  - registers
  - acknowledgement of receipt
  - wraps
  - correct labelling.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- create a product and/or service
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate effective time management
- clean the work area when the task is completed.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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SALES AND SERVICE 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a sales and service career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an awareness of retail sales practices. • Students will develop an understanding of quality customer care. • Students will become proficient with tools typically found in the sales and service industry. • Students will identify marketing and promotional strategies and their role in selling products. • Students will develop an awareness of business operations and become familiar with a variety of service- and product-based businesses within their community.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a sales and service career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- identify career opportunities in the sales industry; e.g.,
  - sales clerk
  - sales manager
  - couriers
  - stock clerks
  - customer service representatives.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify potential safety hazards at the work placement and at home; e.g.,
  - building security
  - property protection
  - window security
  - fire protection
- demonstrate adaptability to avoid/correct possible workplace hazards related to the retail sales environment; e.g.,
  - workplace temperature
  - noise
  - computer glare
  - lighting
  - posture/wrists
- demonstrate procedures for lifting and moving products
- identify the correct procedures for addressing injuries and identify related documentation
- identify the consequences of alcohol and drug use on the worker and the workplace
- develop safe work habits when working with tools, equipment and materials in a sales environment; e.g.,
  - complete regular safety self-assessments
  - list safety rules common to the industry.

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Students will develop an awareness of retail sales practices.

Sales Orientation

Students will:

- develop skills in sales- and service-related tasks; e.g.,
  - stocking
  - monetary basics
  - employer expectations
  - customer satisfaction
- define and apply sales and service terminology; e.g.,
  - service
  - profit
  - merchandising
  - marketing
  - advertising
- integrate technology into the sales and service business; e.g.,
  - use computer software
  - organize electronic files
  - fax, scan and print
  - prepare documents common in sales and service
- demonstrate an understanding of sales practices; e.g.,
  - identify profits
  - create displays
  - participate in marketing plans
  - outline and identify employer expectations
- evaluate common sales techniques; e.g.,
  - explain the purpose/need for sales and service
  - understand the client base
  - apply merchandizing strategies
- demonstrate, with increasing confidence, the use of various sales techniques.

Students will develop an understanding of quality customer care.

Providing Service

Students will:

- define client service
- discuss basic client services; e.g., application of knowledge, communication skills and safety practices
- identify and describe professional behaviour appropriate to a selected work area
- apply ethical sales and service practices to customers and coworkers; e.g.,
  - perform quality customer care and service
  - engage coworkers and customers in a courteous manner
- identify factors that affect client satisfaction; e.g., time, tolerance, appearance, quality
- show initiative and demonstrate enthusiasm when planning for and delivering client services.

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Students will become proficient with tools typically found in the sales and service industry.

Tools in Sales and Service

Students will:

- identify equipment and machines used in retail sales and service
- identify types of sales and service businesses and careers that require cashier skills; e.g.,
  - supermarkets
  - department stores
  - small businesses
- identify the major keys on a cash register; e.g., main components and sign-in/off
- identify the purpose of, and the procedures for, changing floats; e.g.,
  - demonstrate basic monetary competence
  - roll coins
  - complete daily cash records
- follow the required procedures for collecting payment; e.g.,
  - debit cards
  - credit cards
  - cheques
- demonstrate the ability to operate calculator functions; e.g., calculate taxes/percentages and discount prices
- identify appropriate telephone procedures; e.g.,
  - demonstrate telephone courtesy
  - respond correctly to incoming calls
- recognize the importance of the telephone in the sales and service industry; e.g., identify basic telephone functions and features
- demonstrate the ability to:
  - use directories
  - record contact numbers
  - organize telephone lists
- demonstrate proficiency in the use of keyboard-related hardware; e.g.,
  - word processors
  - printers
  - audiovisual equipment
- maintain a well-organized work station and identify the location and purpose of sales and service tools and equipment.

Students will identify marketing and promotional strategies and their role in selling products.

Marketing and Promotion

Students will:

- define advertising and promotion and describe their purpose on a local, national and global scale
- identify promotional strategies; e.g.,
  - word of mouth
  - newspapers
  - magazines

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  - radio
  - television
  - displays
- describe and implement promotional strategies for:
  - school dances
  - graduations
  - concerts
  - pep rallies
- prepare an advertising message—visual, print or audio
- display the ability to develop personal promotion; e.g.,
  - grooming and hygiene
  - clothing to reflect the nature of the industry
  - business cards and contact numbers
- maintain product presentation, rotation and displays
- explore access to the global marketplace through the Internet
- identify security concerns related to online shopping.

Students will develop an awareness of business operations and become familiar with a variety of service- and product-based businesses within their community.

Business Operations

Students will:

- demonstrate basic calculator functions
- identify and demonstrate the purpose of records, receipts and bookkeeping in the sales and service industry; e.g.,
  - record product inventory
  - use computer files
  - complete basic retail forms
  - understand purchase and inventory forms
  - demonstrate the ability to return or exchange items with receipts while abiding by store policy
- demonstrate the ability to successfully manage banking records and statements; e.g., deposits, withdrawals, accounts, interest rates
- develop an understanding of credit and its uses
- analyze credit applications; e.g., interest rates, conditions and terms of application
- create a personal budget
- practise interviews with managers, employees, customers and owners of businesses within the community to gain further understanding of business operations
- define and practise business terminology so that knowledge can be obtained concerning profit, loss, marketing, management and business objectives
- explore proper financial reporting procedures; e.g.,
  - prepare income statements and balance sheets
  - define income; e.g., fees, sales, commission
  - define expenses; e.g., salary, advertising, utilities, miscellaneous, repairs
  - define assets, liabilities and owner's equity; e.g., worth of the business
- practise the preparation of financial statements for personal and professional use.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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SALES AND SERVICE 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a sales and service career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate entry-level retail sales practices. • Students will apply their customer service skills in establishing positive guest relations. • Students will demonstrate the effective use of tools typically found in the sales and service industry. • Students will demonstrate marketing and promotional strategies and identify the role of these strategies in selling products. • Students will demonstrate an awareness of business operations and become familiar with a variety of service- and product-based businesses within their community.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.	**Interpersonal Communication** *Students will:* • communicate thoughts and feelings appropriately; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate body language • maintain a balance between speaking, listening and responding • work together to achieve goals • demonstrate the ability to deal constructively with conflict.
Students will promote equity in work and community endeavours.	**Building Community** *Students will:* • demonstrate and model courteous behaviour in daily interactions • demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction • assess their personal contribution to community growth.
Students will demonstrate the ability to complete tasks in a team environment.	**Teamwork** *Students will:* • assess the effectiveness of group and personal contributions; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a sales and service career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- identify career opportunities in the sales and hospitality industry.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate the correct procedures for addressing injuries and related documentation
- demonstrate knowledge of the consequences of alcohol and drug use on the worker and the workplace
- describe the information needed for an accident report
- develop a safe and clean work area and an ergonomic work station
- develop safe work habits when working with tools, equipment and materials in a sales and hospitality environment; e.g.,
  - complete regular safety self-assessments
  - list safety rules common in the industry
  - develop cleaning and sanitizing schedules and procedures for equipment and facilities
  - describe types of cleaners and sanitizers and their proper use.

Students will demonstrate entry-level retail sales practices.

Sales Practices

Sales Preparation

Students will:

- demonstrate skills in a sales-related and hospitality service-related field; e.g.,
  - monetary basics
  - employer expectations
  - customer satisfaction/concerns

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- define and apply entry-level ability and competence in:
  - maintenance procedures
  - communication
  - computer systems
  - the proper use of equipment
  - maintaining a safe working environment
- integrate technology into sales and hospitality services; e.g.,
  - use computer software
  - organize electronic files
  - fax, scan and print
  - prepare documents common in sales and service
- demonstrate supply management skills appropriate to each job area; e.g.,
  - inventory control
  - storage
  - security and safety
- identify and demonstrate sales techniques used to sell different types of products; e.g.,
  - food products
  - leisure products
  - personal services
  - clothing
  - vehicles
  - homes
  - housewares
- describe the relationship between selling goods and providing services
- describe different sales and service techniques; e.g.,
  - point-of-sale
  - direct sales
  - telephone sales
  - party sales
  - Internet sales.

Consumer Preparation

Students will:

- identify the forms of product insurance and warranties that protect the consumer
- research the complaint process, the *Sale of Goods Act* and the *Personal Information Protection Act*
- discuss and demonstrate the importance of the proper use of credit; e.g.,
  - prepare a report or brochure outlining tips for using credit
  - research the government organizations that assist debtors
- use proficient comparison-shopping techniques for a household; e.g., electronic equipment, furniture
- prepare a budget for a major purchase, service or travel investment; e.g., vacation, wedding, vehicle.

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Students will apply their customer service skills in establishing positive guest relations.

Providing Service

Students will:

- demonstrate effective communication techniques; e.g.,
  - project a positive image
  - use courteous manners
  - maintain composure in adverse situations; e.g., conflict resolution
  - use appropriate behaviour and communication techniques when welcoming and serving guests
- demonstrate understanding when assisting guests or customers with special needs
- predict situations that could be potentially hazardous for guests or customers
- demonstrate effective listening and speaking skills; e.g.,
  - establish interpersonal connections
  - give appropriate directions to guests or customers
- identify and explain alternative strategies for responding to positive and negative feedback from a client, coworker or employer
- describe strategies that may be used to assess client service; e.g.,
  - identify and explain current client service abilities and limitations
  - describe how client service abilities can be enhanced
- evaluate their performance of duties and tasks to constantly improve their communication, sales and hospitality competencies.

Students will demonstrate the effective use of tools typically found in the sales and service industry.

Tools in Sales and Service

Students will:

- demonstrate the effective use of equipment and machines in sales and service
- apply proficient cash management strategies when working with:
  - debit cards
  - credit cards
  - cheques
- demonstrate the ability to use calculator functions for calculating taxes, percentages and discount prices
- demonstrate appropriate telephone procedures; e.g.,
  - demonstrate telephone courtesy
  - respond correctly to incoming calls
- demonstrate proficient use of keyboard-related hardware; e.g.,
  - word processors
  - printers
  - audiovisual equipment
- maintain a well-organized work station and identify the location and purpose of sales and service tools and equipment.

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Students will demonstrate marketing and promotional strategies and identify the role of these strategies in selling products.

Marketing and Promotion

Students will:

- demonstrate understanding of the marketing concept; e.g.,
  - determine the needs of the customer
  - prepare an advertising message, using any media
  - implement public relations activities
  - research and analyze market information
  - demonstrate the selling process
- analyze the market and review business opportunities in their town/city and province; e.g., travel businesses
- analyze successful and unsuccessful businesses and suggest improvements that could be made by the owners
- differentiate the ownership characteristics of sole proprietorships, partnerships and corporations
- compose a draft of a business plan; e.g.,
  - create a business plan that could promote a product, event or service
  - identify the various steps in a business plan
  - critique the business plan by identifying areas of change or improvement
- advertise a product or service, using different media
- outline expenses for the development of a product or service
- prepare a budget, using spreadsheet software.

Students will demonstrate an awareness of business operations and become familiar with a variety of service- and product-based businesses within their community.

Business Operations and Entrepreneurship

Students will:

- practise interviews with managers, employees, customers and owners of businesses within the community to gain further understanding of business operations
- define and practise business terminology to obtain knowledge concerning profit, loss, marketing, management and business objectives
- practise the preparation of a variety of financial documents and prepare financial statements with the appropriate headings and format
- analyze balance sheet components and formatting and understand that:
  - the balance sheet is prepared on a specific date
  - the income statement is prepared for a certain month
  - net income or loss is determined on an income statement and the equity or worth of an owner is determined by the basic accounting equation
- demonstrate understanding of the entrepreneurial concept; e.g.,
  - define entrepreneur
  - define job satisfaction for an employee and employer
  - research and study proper business etiquette
  - discuss business ethics and formalities
- outline the characteristics of a successful and unsuccessful entrepreneur; e.g.,
  - risk-taking characteristics
  - the ability to manage personal products and service
- evaluate success and limitations or obstacles in the entrepreneurial world.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- design marketing and management practices for the product or service
- design a budget
- design a timeline and dates of completion, using an appropriate timeline chart, with supervisor/instructor assistance
- prepare for product or service sales; e.g.,
  - identify positive sales techniques
  - brainstorm and share information with classmates and the instructor
  - research sales techniques through the use of books, articles and the Internet
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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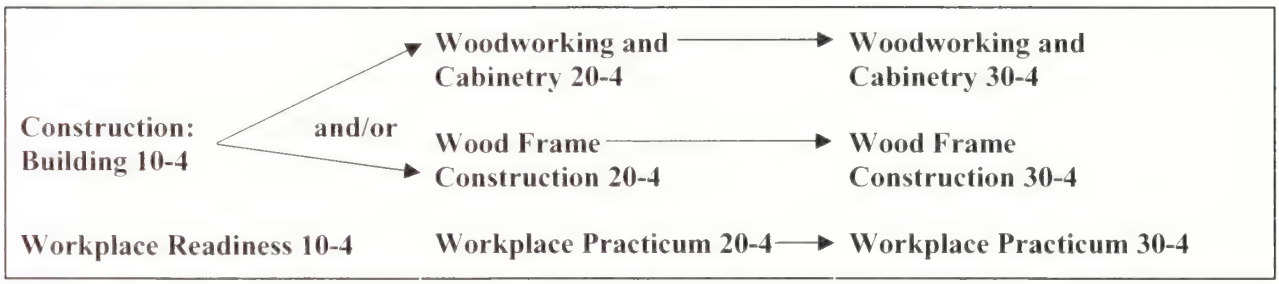
KNOWLEDGE AND EMPLOYABILITY
CONSTRUCTION: BUILDING

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Construction courses are designed to teach occupational knowledge and skills for entry-level positions in metal fabrication, construction systems, woodworking and cabinetry, and wood frame construction by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Construction: Building 10-4 provides a basis for, and an introduction to, Woodworking and Cabinetry 20-4 and Wood Frame Construction 20-4. Students who successfully complete Construction: Building 10-4 may also take Construction Systems 20-4.[1]
- Woodworking and Cabinetry 20-4 and 30-4 focus on the manufacture of wood products.
- Wood Frame Construction 20-4 and 30-4 focus on the manufacture of support frames and walls for buildings.
- Construction Systems 20-4 and 30-4 consist of specific knowledge related to the heating, ventilation and air conditioning (HVAC), electrical, masonry and plumbing trades. These courses can either be taught as a whole or one or a combination of trades may be elaborated upon to complete a course, based on facilities, interest and the expertise of the instructor.
- Students interested in construction should be encouraged to take a combination of courses at the 20 and 30 levels.

1. Construction Systems 20-4 and 30-4 are part of the Construction: Metal Fabrication strand.

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- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for all of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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CONSTRUCTION: BUILDING 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a building construction career environment. • Students will develop safe workplace practices and procedures. • Students will be introduced to technology to develop a high-quality product or service. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in woodworking. • Students will apply appropriate finishing procedures to products.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a building construction career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- investigate local opportunities within a career field
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and shop activities
  - treat the shop area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during construction procedures; e.g.,
  - identify safety device locations in the shop or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and shop conditions

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  - identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
  - identify the consequences of alcohol and drug use on the worker and the workplace
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize the health and safety hazards associated with construction procedures; e.g.,
  - identify the common types of ladders and scaffolds used in building construction and discuss their safe use
  - identify safe procedures for rigging and hoisting
  - identify common knots and hitches used in rope work and discuss their safe application
  - identify an ability to complete assignments, using an interactive program; e.g., Construction Safety Training System (CSTS)
- identify important standards (codes) and governing bodies in the construction industry.

Students will be introduced to technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- explore new and emerging products and technological advances used in building construction.

Providing Service

Students will:

- identify client relationships or interactions within the field of building construction
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- identify the importance of customer or client service to all businesses/industries
- identify professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in woodworking.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- identify common woodworking tools and equipment and describe their functions and safety and handling precautions; e.g., layout, fastening, shaping, cutting and boring tools, such as measuring devices, hammers, wood saws, wood chisels, screwdrivers, planes, rasps, sanding blocks
- develop and demonstrate the correct use of measuring, layout, fastening, cutting and smoothing hand tools
- demonstrate the correct handling of common hand and power tools; e.g.,
  - jigsaw
  - router
  - drill
  - circular saw
  - sanders
  - band saws
  - table saws
  - drill press
  - lathe
  - compound mitre saw
  - planer
- identify and demonstrate the proper use of clamps and vices
- identify correct storage practices and locations for tools and equipment
- demonstrate proper care of tools and equipment; e.g., the proper technique for sharpening a wood chisel.

Materials

Students will:

- identify and describe common woods and composites and how they are processed to make building materials; e.g.,
  - identify common hardwoods and softwoods used in carpentry-related occupations
  - identify wood by sizes commonly used in the industry
- identify and demonstrate the proper use of the glues/adhesives used in woodworking and list the advantages and disadvantages of each
- identify and describe fastening devices used in woodworking
- identify commonly used nails and screws by type, size and properties
- identify and use proper surface preparation equipment; e.g., identify, describe and select appropriate abrasives.

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Students will apply appropriate finishing procedures to products.

Finishing Procedures

Students will:

- demonstrate proper selection and application techniques for common fastening devices
- demonstrate the ability to countersink fastening devices
- demonstrate proper assembly and finishing techniques for basic woodworking projects; e.g.,
  - identify the major features, from Material Safety Data Sheets (MSDS), on the labels of finishing products
  - exhibit skill in making accurate and tight fits
- demonstrate the ability to prepare surfaces for applying finishes
- identify, describe and demonstrate the proper application of wood finishing products; e.g.,
  - fillers
  - water-based paint
  - oil-based paint
  - stains
  - clear coats.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project and identify the need for planning in woodworking
- prepare a project management plan, including budget, timeline and sample drawings
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing; e.g.,
  - sketches
  - orthographic and isometric drawings
  - scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a simple project
- transfer/lay out a cutting list, from drawings to project material
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate safe processes and skills to plan, fabricate, assemble and finish a useful product.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.	**Listening, Speaking, Reading and Writing** *Students will:* • read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals • identify a purpose for writing • print or write legibly, spell accurately and apply rules of grammar to construct text • listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.	**Problem Solving** *Students will:* • identify and define, and ask relevant questions to clarify, the problem • evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context

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- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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WOODWORKING AND CABINETRY 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a woodworking and cabinetry career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will develop basic knowledge and the proper use of the tools, equipment and materials used in cabinetmaking and millworking operations. • Students will demonstrate proper assembly and finishing techniques.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a woodworking and cabinetry career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify important standards (codes) and governing bodies in the construction industry
- recognize health and safety hazards associated with construction procedures; e.g., demonstrate preventive measures to avoid accidents and injury to themselves and others during construction procedures.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances in woodworking and cabinetry.

Providing Service

Students will:

- identify client relationships or interactions within the field of woodworking and cabinetry
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/ industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will develop basic knowledge and the proper use of the tools, equipment and materials used in cabinetmaking and millworking operations.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- identify, describe and demonstrate the proper use of layout tools and measuring devices; e.g., rules, squares, dividers, gauges
- identify, describe and demonstrate the safe use of hand tools; e.g., sawing, edge cutting, striking, drilling and boring, fastening, and metalworking tools

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- identify, describe and demonstrate the safe use of portable power tools; e.g., saws, drills, drivers, routers, sanders and pneumatic tools
- identify, describe and demonstrate the safe use of stationary power tools and equipment; e.g.,
  - cutting machines; e.g., table, mitre, band and radial saws
  - edging and surfacing machines; e.g., jointer, thicknesser
  - shaping and drilling machines; e.g., shapers, routers, lathes, sanders, drill presses, mortisers
- develop and practise terminology specific to cabinetmaking and millworking occupations and use proper tool names.

Materials

Students will:

- identify and describe common woods and manufactured materials used in cabinetry; e.g.,
  - distinguish between hardwoods and softwoods
  - identify and describe common lumber defects; e.g., cup, twist, crown, bow
  - identify and describe common manufactured materials used in cabinet production; e.g., medium-density fibreboard (MDF), particle board, plywood, hardboard, plastic laminates
- identify, describe and demonstrate the proper use of fasteners, adhesives and clamping tools; e.g.,
  - nails, screws, staples, anchors, dowels, biscuits
  - polyvinyl glue (carpenter's glue), contact cement, hot glue, epoxies
  - bar clamp, C-clamp, band clamp, corner clamps, vices
- identify, describe and properly use abrasive products, including the selection of appropriate types and grit sequence; e.g., sheeting products, belts, discs, spindle sleeves
- identify and demonstrate the correct storage practices for tools, equipment and materials.

Students will demonstrate proper assembly and finishing techniques.

Assembly and Finishing

Students will:

- identify, describe and produce basic wood joints; e.g., butt, rabbet, mitre, dado
- identify, describe and apply finishes by brushing, spraying, rolling, dipping and wiping; e.g., identify tools and equipment used to apply finishes and follow safety procedures as outlined
- identify and describe the components of a basic cabinet and incorporate this knowledge into a project; e.g.,
  - gables, partitions, back panels, stiles and rails, shelves, doors and drawers
  - hinges, latches, pulls, locks, connectors and brackets.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- identify the steps taken in managing a building project
- prepare a sample building project management timeline
- develop a building project checklist
- discuss the need for a building project budget
- identify the purpose of sketches, drawings and blueprints
- identify the procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a woodworking and cabinetry project
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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WOODWORKING AND CABINETRY 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a woodworking and cabinetry career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate entry-level knowledge and the proper use of the tools, equipment and materials used in cabinetmaking and millworking operations. • Students will demonstrate entry-level assembly and finishing techniques.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.	**Lifelong Learning** *Students will:* • identify learning opportunities related to learning goals, commitments and resources; e.g., – identify opportunities for further education/training – locate needed financial support systems – locate needed personal support systems • practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals • create a plan that demonstrates continuous learning; e.g., – analyze requirements for graduation and for further education/training – modify a learning plan to reflect requirements and opportunities.
Students will manage change effectively to support their goals.	**Adapting to Change** *Students will:* • prioritize and assign resources to meet commitments and goals • prioritize commitments and goals to achieve a balanced lifestyle • redefine an action plan as situations change; e.g., – use adaptive strategies – redefine personal goals – select personal coping mechanisms • access available and appropriate sources of support • identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige
- build personal career paths and networks
- analyze how work contributes to societal and economic needs and a sense of responsibility
- prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.

Self-development

Students will:

- continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals
- demonstrate entry-level self-presentation appropriate to the activity and role
- maintain a high standard of personal ethics when interacting with others.

Students will manage risks to achieve both personal and workplace goals.

Risk Management

Students will:

- maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace
- monitor success in reducing the impact of hazards on themselves and others
- demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace
- work with others to respond to emergencies
- take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a woodworking and cabinetry career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- demonstrate an informed decision-making process; e.g.,
  - collect evidence supporting their career choice
  - integrate evidence and present a collection of artifacts and reflections to support an informed career pathway selection.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human-relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances in woodworking and cabinetry; e.g., examine the effects of current technological advances in the woodworking and cabinetry industry and explain the impact of current technology on the job descriptions of future woodworking and cabinetry trade workers.

Providing Service

Students will:

- identify client relationships or interactions within the field of woodworking and cabinetry
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/ industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will demonstrate entry-level knowledge and the proper use of the tools, equipment and materials used in cabinetmaking and millworking operations.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- select and demonstrate the proper use of common hand tools; e.g.,
  - measuring and layout
  - sawing
  - striking
  - edge cutting
  - metalworking
- select and demonstrate the safe use of portable power tools used in cabinetmaking and woodworking shops; e.g.,
  - portable power saws
  - routers
  - power drills and drivers
  - sanders
  - pneumatic tools
- select and demonstrate the proper use of stationary power tools used in cabinetmaking and millworking shops
- demonstrate the proper use of cutting tools; e.g.,
  - table saws; e.g., change blades, set up for rip, cross cut, bevel, mitre, dado
  - band saws; e.g., change blades, cut arcs and circles
  - radial saws; e.g., change blades, set up for cross cuts and multiple cuts, rip, bevel, dado
  - jointers; e.g., edges, face
  - thickness planers; e.g., dimension stock to size
  - boring machines (drill press and mortisers); e.g., set up, adjust, bore/mortise
  - sanding machines (spindle, disc, belt); e.g., set up, adjust and change abrasives
- perform basic hand and power tool maintenance; e.g., sharpen hand tools and remove and replace saw blades, router bits, sanding belts, drill bits.

Materials

Students will:

- review and demonstrate correct storage practices and locations for materials and review MSDS
- identify and describe wood components and characteristics; e.g.,
  - identify common species based on samples; e.g., spruce-pine-fir (SPF), cedar, oak, maple, walnut, cherry
  - distinguish between solid woods and man-made materials
  - identify different cuts of lumber; e.g., quartered, rotary, flat

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- identify common lumber defects and imperfections; e.g., cup, twist, bow, crown
- select wood products most suited to specific construction applications, based on such factors as appearance, strength, workability, cost and availability

- identify fasteners, adhesives and abrasives used in cabinetmaking; e.g.,
  - identify various fasteners and their application
  - identify adhesives and estimate drying times
  - identify abrasive types and select and correctly use each specified grit type
  - identify different clamping tools used in cabinetmaking
- identify finishing materials and applicators; e.g.,
  - distinguish between oil- and water-based products
  - identify tools and equipment to apply finishes; e.g., brushes, rollers, sprayers, cloth applications
  - understand and follow safety procedures as outlined by the manufacturer's instructions.

Students will demonstrate entry-level assembly and finishing techniques.

Assembly and Finishing

Students will:

- demonstrate the use of joinery; e.g.,
  - construct projects, using a variety of wood joints with increasing complexity
  - demonstrate the use of hardware, fasteners and adhesives
  - assemble a project, using the proper fasteners, adhesives and clamping tools
  - install common hardware on a project properly; e.g., overlay and butt hinges, latches, pulls, locks
- demonstrate finishing techniques; e.g.,
  - prepare a surface to receive a finish
  - apply stains and clear coats
  - review safety procedures.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- review the fundamentals of project planning and design as they relate to cabinetmaking
- develop a project plan; e.g.,
  - produce sketches and isometric and orthographic representations
  - produce a scale drawing
  - interpret basic shop drawings
  - identify the components of a blueprint; e.g., plan view, elevations, sections
  - complete a material list
  - create a procedure list
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals • estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area • use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.	**Computer Operations and Computer Applications** *Students will:* • model and assume personal responsibility for the ethical use of information technologies • demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls • use computer operations to assist in the completion of daily workplace operations; e.g., – use basic keyboarding skills – store, organize and retrieve information correctly – locate and select information and ideas using appropriate technology and information systems; e.g., Internet – access, send and retrieve e-mail and attachments • demonstrate procedures for connecting and using audio, video and digital equipment • demonstrate procedures for sending and receiving faxes and setting up a fax machine • demonstrate procedures for copying and printing documents.

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WOOD FRAME CONSTRUCTION 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a wood frame construction career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will develop and review tool knowledge for use in wood frame construction. • Students will develop the skills needed to read blueprints and apply these skills to various construction tasks. • Students will develop the skills needed to construct footings and foundations. • Students will develop competencies in framing floor, wall and roof trusses. • Students will develop competencies in the installation of prefabricated stairs. • Students will develop competencies in the installation of exterior doors and windows. • Students will develop competencies in the exterior finishing of residential buildings.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a wood frame construction career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- list individual skills and interests that relate to building construction trades and occupations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- identify career opportunities in building construction occupations
- match trade-specific terminology with the associated trade; e.g.,
  - draftsperson; e.g., elevation, floor plan, plot plan
  - excavation/heavy equipment operator; e.g., building pocket, setback, surveyor's pin
  - footings/forms/cement finisher; e.g., pilings, forms, auger
  - framing carpenter; e.g., stud, plumb, cripple
  - stair installer/carpenter; e.g., tread, riser, stringer
  - siding installer; e.g., soffit, fascia, weep hole
  - roofing installer; e.g., tar paper, starter row, cap
- prepare marketable skills and strengths; e.g., résumé, portfolio, interview.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment; e.g., become familiar with work environments within the specific subtrades in wood frame construction
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- recognize the importance of having policies, procedures and regulatory bodies that support the operation of a safe workplace
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling environmentally hazardous materials and waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- discuss potential hazards associated with residential building construction; e.g.,
  - review and practise good electrical safety habits and report and repair potential electrical safety hazards in the shop and at home
  - select and demonstrate proper set-up procedures for ladders and scaffolding systems
  - select and use common knots and hitches for hoists and rigging
  - select and use appropriate hoisting and rigging equipment for common construction activities
- recognize the importance of permits and working to code and identify where to get information on building codes and local bylaws.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances in wood frame construction
- understand the value of electronic communication and attach documents, such as CAD drawings and contracts, to e-mail messages
- be aware of spreadsheet and accounting software that facilitates mathematical calculations and operational budgeting; e.g., calculate the cost of materials for various projects

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- identify the need for accurate measurements; e.g.,
  - identify the use of light-emitting diode (LED) or laser levelling devices
  - discuss the necessity for global positioning system (GPS) devices in site and foundation layouts
  - use elevation and site drawings to recognize excavation points
  - find the centre point of materials and sites, using both metric and imperial dimensions
  - lay out a wall plate with a window, door and multiple studs
  - calculate the size of studs needed to create walls of different heights
  - identify pitch, rise and run for rafter placement.

Providing Service

Students will:

- identify client relationships or interactions within the field of wood frame construction
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/ industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will develop and review tool knowledge for use in wood frame construction.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- list and identify tools used in various construction trades; e.g.,
  - measuring and layout tools; e.g., transits, tape measures, plumb bobs
  - cutting tools; e.g., chain saws, keyhole saws, routers
  - hand tools; e.g., planers, hammers, screwdrivers
  - power tools; e.g., drills, sanders, nail guns
  - elevator tools; e.g., ladders, scaffolds, sawhorses
- demonstrate the proper techniques for using trade-specific tools.

Materials

Students will:

- identify materials used in building construction; e.g.,
  - foundation/cribber; e.g., forms, rebar, dimensional lumber, concrete, piling tubes
  - carpenter/framer; e.g., dimensional lumber, poly barrier, vinyl and wood doors and windows, teleposts
  - exterior finisher; e.g., vinyl siding, stucco, veneers, aluminum
  - roofing installer; e.g., shingles, tar paper, wood shakes, ceramics.

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Students will develop the skills needed to read blueprints and apply these skills to various construction tasks.

Reading Blueprints

Students will:

- read and interpret basic construction blueprints, working drawings and building codes
- demonstrate measurement and layout procedures and applications
- translate a blueprint measurement from scale.

Students will develop the skills needed to construct footings and foundations.

Footings and Foundations

Students will:

- understand the need for footings and how to make them; e.g.,
  - set up a builder's level
  - identify elevation points from a benchmark
  - install batter boards
  - identify the basic components of and construct simple footing forms
  - identify the basic components of and construct simple foundation wall forms
  - maintain form materials properly
- choose appropriate footing widths for the size of the building and the type of soil base
- tie rebar to add to footing strength
- provide drainage away from footings
- use correct depth measurements to place footings and foundations below the frost line
- find centre points.

Students will develop competencies in framing floor, wall and roof trusses.

Framing

Floors

Students will:

- demonstrate floor-framing techniques and procedures; e.g.,
  - identify and install a sill plate and ladder frame
  - cut floor joists and truss joists
  - frame floor openings
  - identify and install bridging, blocking and hangers
  - install subfloor sheathing and adhesives
  - select and use appropriate floor-framing fasteners and adhesives
  - identify the crown in joists and trusses.

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Walls

Students will:

- demonstrate layout procedures for framing
- use blueprints to determine where doors and windows need to be framed
- mark stud placement clearly, including cripples, backing and openings
- demonstrate framing skills, including using hand and power tools, building standing walls, choosing lumber and recognizing warping and waning; e.g.,
  - identify and select commonly used wood framing stock
  - check stock for defects and squareness
  - measure materials, using a tape measure
  - identify properties, and the proper use, of a framing square
  - identify and select proper fastening devices for framing projects
  - use, safely, circular saws, reciprocating saws, compound mitre saws and table saws
  - use compressed-air tools in a safe manner; e.g., framing nailers, staplers, brad nailers
  - maintain, properly, hand tools, power tools and compressed-air tools
- demonstrate wall-framing techniques and procedures; e.g.,
  - lay out floor deck for walls
  - cut wall plates
  - read/lay out simple wall framing on wall plates
  - identify the basic elements used in wall framing
  - cut studs, headers, jacks, rough sills and cripples
  - assemble corner and T-posts
  - assemble a header
  - frame a rough opening for a door
  - frame a rough opening for a window
  - assemble wall sections
  - install a cap plate
  - install wall blocking
  - install exterior wall sheathing
  - raise and anchor a wall section
  - plumb, align and brace wall sections
- demonstrate the ability to sheath framed floors, walls and rafters, according to specifications
- identify and use factory markings for fastener placement
- demonstrate the proper use of circular saws to trim sheathing
- identify and install tongue and groove materials properly.

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Roof

Students will:

- create trusses by calculating the rise and run, plumb cuts by using speed squares and choose lumber by recognizing the crown; e.g.,
  - identify and describe common truss assemblies
  - lay out trusses
  - cut, assemble and install simple truss patterns
  - identify the material and procedures required to install roof sheathing
  - install roof sheathing
  - identify and describe the safe selection, setting and anchoring of trusses by hand or crane
  - brace a roof assembly
  - identify truss systems
  - identify and demonstrate the proper procedures for standing trusses
  - identify and install ridge blocks, rough fascia and backing for roof trusses.

Students will develop competencies in the installation of prefabricated stairs.

Stair Installation

Students will:

- identify the procedures for squaring and installing stairs safely and accurately; e.g.,
  - use a tape measure to determine square
  - use spacers to allow for the installation of drywall
  - use temporary supports to attach multiple components.

Students will develop competencies in the installation of exterior doors and windows.

Exterior Doors and Windows

Students will:

- install doors and windows, level and plumb, according to schedule; e.g.,
  - remove all packing materials
  - use spacers to create equal insulating pockets
  - use a level to plumb doors and windows.

Students will develop competencies in the exterior finishing of residential buildings.

Exterior Finishing

Students will:

- measure starting points and install vinyl siding correctly; e.g.,
  - choose level starting points
  - install starter strips, drip caps and corner caps
  - nail to allow for expansion
  - cut with tin snips and circular saws
- lay out starter rows and install shingles accurately; e.g.,
  - use chalk lines and tape measures to create straight starting points
  - use staplers and tar paper on low-slope roofs
  - determine proper overhang allowances
  - trim shingles before and after placement
  - use factory tabs to place shingles
  - use roofing hammers and guides to place shingles accurately.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- identify the steps taken in managing a building project
- prepare a sample building project management timeline
- develop a building project checklist
- discuss the need for a building project budget
- identify the purpose of sketches, drawings and blueprints
- identify the procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a wood frame project; e.g., shed, doghouse
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use the appropriate tools and technology for a task or project.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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WOOD FRAME CONSTRUCTION 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a wood frame construction career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will display the entry-level skills needed to read blueprints and apply these skills to a number of occupations. • Students will demonstrate an understanding of vapour barriers, caulking and thermal insulation. • Students will demonstrate an understanding of drywall materials, tools and application techniques. • Students will demonstrate an understanding of taping materials and related application techniques. • Students will demonstrate an understanding of the use and application of paints, stains and wall coverings. • Students will demonstrate an understanding of flooring materials and methods. • Students will demonstrate an understanding of interior finishing in a new or an existing home.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a wood frame construction career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- explore career opportunities in wood frame construction and examine and explain specific occupational opportunities within their areas of interest
- demonstrate an informed decision-making process; e.g.,
  - collect evidence supporting their career choice
  - integrate evidence and present a collection of artifacts and reflections to support an informed career pathway selection.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human-relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance

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- demonstrate a willingness to work
- demonstrate respect for others
- follow accepted principles and procedures
- recognize opportunities for further education/training.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace; e.g., become familiar with work environments within the specific occupations of wood frame construction
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- recognize the importance of having policies, procedures and regulatory bodies that support the operation of a safe workplace
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources; e.g., review and demonstrate how to handle and store materials according to the MSDS training material
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling environmentally hazardous materials and waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- discuss potential hazards associated with residential building construction; e.g.,
  - review and practise good electrical safety habits and report and repair potential electrical safety hazards in the shop and at home
  - demonstrate entry-level competence in the selection and use of ladders and scaffolding systems
  - demonstrate entry-level competence in the basic rigging and hoisting procedures used in construction
  - develop a basic understanding of standard hand signals for rigging and hoisting
- pass, successfully, the industry-standard Construction Safety Training System (CSTS) course as offered through the Alberta Construction Safety Association (ACSA).

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Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances in wood frame construction; e.g., examine the effects of current technological advances in the wood frame construction industry and explain the impact of current technology on the job descriptions of future wood frame construction trade workers
- understand the value of electronic communication and attach documents, such as CAD drawings and contracts, to e-mail messages
- use spreadsheet and accounting software that facilitate mathematical calculations and operational budgeting
- identify uses for light-emitting diode (LED) or laser devices.

Providing Service

Students will:

- identify client relationships or interactions within the field of wood frame construction
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will display the entry-level skills needed to read blueprints and apply these skills to a number of occupations.

Reading Blueprints

Students will:

- identify the reading of blueprints as a component of construction occupations; e.g.,
  - identify businesses in the community that employ draftspersons, estimators and material purchasers
  - identify the duty and scope of such vocations
- use drawing and planning skills in project work
- use blueprints and specifications for interior walls and carpentry finishes; e.g., sectional views, elevations
- use electrical blueprints to identify electrical placements and components; e.g., electrical circuits
- use mechanical blueprints to identify mechanical placements and components; e.g., mechanical parts and material schedules.

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Students will demonstrate an understanding of vapour barriers, caulking and thermal insulation.

Vapour Barriers, Caulking and Thermal Insulation

Students will:

- identify insulation application as a building occupation; e.g.,
  - identify local insulation companies and supply stores
  - identify the scope, duties and work expectations of an insulator
  - identify the safety regulations and clean-up and disposal practices of the insulation trade
- identify and demonstrate healthy and safe work practices in the application of insulation; e.g.,
  - wear proper PPE for insulation application
  - follow proper health and safety precautions when applying insulation
- identify tasks performed by insulators in the construction trade; e.g., basements, walls, ceiling blow-ins, pipes and ducts
- identify and demonstrate the proper use of tools associated with insulation; e.g.,
  - cutting tools, application tools, ladders and sawhorses
  - scaffolding in stairwells and open areas
- identify types of thermal insulation; e.g.,
  - fibreglass
  - rock wool
  - rigid polyurethane
- identify and demonstrate the application and installation of vapour barriers, caulking and thermal tape to stop air movement
- identify a variety of R-values and describe the application and installation of commonly used thermal insulation products; e.g., blanket, batten, loose-fill
- identify the need for proper ventilation; e.g.,
  - attic ventilation
  - main floor air exchange
  - fresh air and combustion air.

Students will demonstrate an understanding of drywall materials, tools and application techniques.

Drywall

Students will:

- identify drywall application as a building occupation; e.g.,
  - identify local drywalling companies and supply stores
  - identify the scope, duties and work expectations of a drywaller
  - identify the safety regulations and clean-up and disposal practices of the drywall trade
- identify typical drywall tools and their uses; e.g.,
  - cutting tools
  - drywall lifts and jacks
  - fastening tools
  - fastening devices, such as screws, nails and glue
- identify the varieties of drywall and their applications

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- demonstrate knowledge of drywall preparation; e.g.,
  - inspect vapour barrier and caulking work
  - mark outlets and rafters
  - check framing and backing
  - estimate materials, such as type and sizes of drywall
- identify and demonstrate drywall handling and cutting techniques; e.g.,
  - deliver drywall
  - lift and handle drywall
  - score the front and back
  - measure and score for length and width
  - cut for lights, switches and outlets
- identify and demonstrate methods of applying drywall to ceilings and walls; e.g.,
  - nails, screws, tacking, fastener patterns
  - flat ceilings, sloped ceilings
  - walls, staircases
  - butt joints and bevel joints.

Students will demonstrate an understanding of taping materials and related application techniques.

Taping

Students will:

- identify taping as a building occupation; e.g.,
  - identify local taping companies and taping supply stores
  - identify the scope, duties and work expectations of a taper
  - identify the safety regulations and clean-up and disposal practices of the taping trade
- identify typical taping tools and their functions; e.g., pans, knives, hawk and trowel, machine taping, mixing paddle and drill, sanders
- identify typical accessories and materials used in taping; e.g., corner beads, gauge tape, paper tape, compounds
- identify and demonstrate bead and compound application; e.g.,
  - cut and apply bead
  - round corners
  - identify and demonstrate practices for special applications
- identify and demonstrate different stages of tape and compound application; e.g.,
  - first pass of tape coat
  - embedding joint tape
  - inside corners, outside corners
  - fastener heads
  - fill coats
  - butt joints
  - finish coat
  - textured ceilings

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- identify and demonstrate proper sanding techniques; e.g.,
  - sanding preparation
  - types of sandpaper
  - sanding techniques
  - finishing touches, light check
- demonstrate knowledge of drywall repair; e.g., patch and repair cracks, patch large holes and use butterfly patching.

Students will demonstrate an understanding of the use and application of paints, stains and wall coverings.

Paints, Stains and Wall Coverings

Paint

Students will:

- identify painting and decorating as a building occupation; e.g.,
  - identify local painting firms and supply stores
  - identify the scope, duties and work expectations of a painter or decorator
  - identify the safety regulations and clean-up and disposal practices of the painting trade
- demonstrate knowledge of, and the ability to prepare, old and new drywall surfaces; e.g.,
  - clean, sand and perforate prepainted surfaces
  - prepare new drywall surfaces
- demonstrate the ability to prepare wood for painting; e.g.,
  - consider the hazards of paint removers
  - consider the proper disposal methods for paint removers
  - use methylene chloride stripper
  - scrape wood
  - repair damaged wood
  - sand wood
- demonstrate knowledge of primers and paints and demonstrate the proper choice of each; e.g.,
  - latex primers
  - alkyd primers
  - stain-covering sealers
  - latex finish paints; e.g., high gloss, semigloss, flat
  - alkyd finish paints; e.g., high gloss, semigloss, flat
  - paint disposal
- identify and demonstrate the proper techniques for applying primer and finishing paints; e.g.,
  - choose latex or alkyd paint
  - mask with tape
  - choose brushes and roller naps
  - cut in before rolling out
  - keep a wet edge
  - use rollers
  - paint trim.

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Wood Finishes

Students will:

- identify and demonstrate the proper techniques for applying wood stains and finishes; e.g.,
  - sealing
  - water base, oil base gels, penetrating oils
  - stains
  - polyurethanes
  - clean up and safety.

Wallpaper Finishes

Students will:

- demonstrate knowledge of wallpaper and its applications
- demonstrate knowledge of wallpaper application tools.

Students will demonstrate an understanding of flooring materials and methods.

Flooring

Students will:

- identify the laying of floors as a building occupation; e.g.,
  - identify local floor-laying companies and supply stores
  - identify the scope, duties and work expectations of a floor layer
  - identify the safety regulations and clean-up and disposal practices of the flooring trade
  - identify hazardous materials; e.g., asbestos, lead, mould
- identify common tools used in flooring; e.g., cutting tools, straightedge, carpet roller, glue, applicators, kickers
- identify installation techniques for ceramic tile, vinyl tile, sheet vinyl and laminate flooring; e.g.,
  - prepare the subfloor
  - install the tile
  - fit the last row
  - cut a seam
- identify installation techniques for hardwood floors (prefinished and laminate); e.g.,
  - prepare the subfloor
  - fit and nail hardwood
- identify installation techniques for carpet; e.g.,
  - remove old carpet or linoleum
  - manage carpet outgassing
  - measure and calculate amounts of carpet
  - use different types of carpet and underlay
  - fasten backing strips and glue carpet
  - cut and lay carpet
  - stretch, kick and tuck carpet.

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Students will demonstrate an understanding of interior finishing in a new or an existing home.

Interior Finishing

Students will:

- identify interior finishing as a building occupation; e.g.,
  - identify interior-finishing companies and supply stores
  - identify the scope, duties and work expectations of an interior finisher
  - identify the safety regulations and clean-up and disposal practices of the interior finishing trade
- demonstrate knowledge of the tools used in interior finishing; e.g., mitre box, cut-off saw, air nailer, glues and adhesives
- demonstrate competency in project planning, considering material takeoff and the cost of materials, and create a finished design for a room
- demonstrate knowledge of trim materials; e.g., choose finishing lumber and select millwork
- demonstrate knowledge of trimming windows; e.g.,
  - trim styles
  - jam extension
  - picture-frame a window
  - traditional casing
- demonstrate knowledge of baseboards; e.g., layout, cut and install baseboards
- demonstrate knowledge of interior door installation; e.g.,
  - plumb in and fasten an interior door frame
  - hang an interior door
  - install appropriate hardware.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- review the fundamentals of project planning and design as they relate to interior or exterior finishing projects
- develop a project plan; e.g.,
  - produce sketches, isometric and orthographic representations
  - produce a scale drawing
  - interpret basic shop drawings
  - identify the components of a blueprint; e.g., plan view, elevations, sections
  - complete a material list
  - create a procedure list
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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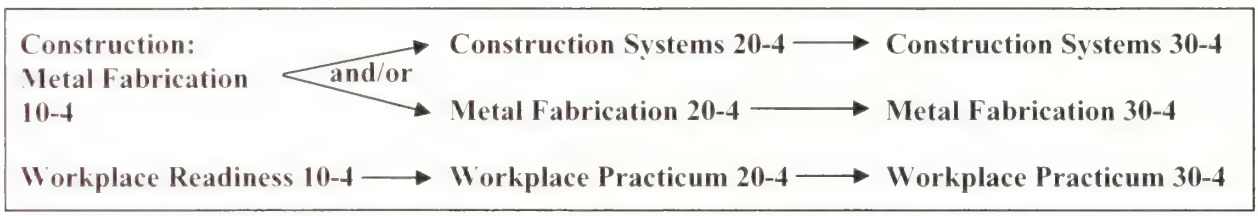
KNOWLEDGE AND EMPLOYABILITY CONSTRUCTION: METAL FABRICATION

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Construction courses are designed to teach occupational knowledge and skills for entry-level positions in metal fabrication, construction systems, woodworking and cabinetry, and wood frame construction by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Construction: Metal Fabrication 10-4 provides a basis for, and an introduction to, Construction Systems 20-4 and Metal Fabrication 20-4.
- Construction Systems 20-4 and 30-4 consist of specific knowledge related to the heating, ventilation and air conditioning (HVAC), electrical, masonry and plumbing trades. These courses can either be taught as a whole or one or a combination of trades may be elaborated upon to complete a course, based on facilities, interest and the expertise of the instructor.
- Metal Fabrication 20-4 and 30-4 focus on joining and finishing metals.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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CONSTRUCTION: METAL FABRICATION 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a metal fabrication career environment. • Students will develop safe workplace practices and procedures. • Students will be introduced to technology to develop a high-quality product or service. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication. • Students will identify the proper procedures for welding, using a variety of devices. • Students will identify and apply proper assembly and finishing techniques to projects.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.	**Building Community** *Students will:* • identify commonly accepted courteous behaviour • assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour • identify the value of volunteering in community activities; e.g., charity work, community car wash.
Students will demonstrate positive effort and behaviour toward achieving a group's goals.	**Teamwork** *Students will:* • identify team goals • work independently and with others to support team goals; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a metal fabrication career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- investigate local opportunities within a career field
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and shop activities
  - treat the shop area with care and pay attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during construction procedures; e.g.,
  - identify safety device locations in the shop or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries

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- identify the proper use of tools with regard to other classmates and shop conditions
- identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
- demonstrate proper body position while at a work station
- maintain a safe and clean work area
- identify and practise the safe use of electrical equipment
- identify the consequences of alcohol and drug use on the worker and the workplace

- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize the health and safety hazards associated with oxyacetylene welding, SMAW and GMAW procedures; e.g.,
  - identify potential electrical safety hazards in the shop and at home
  - identify common types of ladders and scaffolds and discuss their safe use in building construction
  - identify safe, common rigging and hoisting methods used in the construction industry
  - identify common knots and hitches used in rope work and their safe application
  - identify interactive or online programs; e.g., Construction Safety Training System (CSTS)
- identify important standards (codes) to create a safe product.

Students will be introduced to technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- explore new and emerging products and technological advances in metal fabrication.

Providing Service

Students will:

- identify client relationships or interactions within the field of metal fabrication
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- identify the importance of customer or client service to all businesses/industries
- identify professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- identify and demonstrate the correct use of common metal fabrication tools; e.g.,
  - layout, measuring, shaping and boring tools
  - hand tools; e.g., chisel, hacksaw, bolt cutter, tin snips
  - power tools used for fastening, cutting and smoothing; e.g., grinder, hand shear, air shear, abrasive cut-off saw, metal band saw
  - clamps and vices
  - stationary machines and equipment; e.g., squaring shear, roll forming machine, bending brakes, ironworker
- identify a variety of cutting processes
- identify and practise correct storage procedures
- demonstrate proper cleaning and care of tools and equipment.

Materials

Students will:

- identify and describe common ferrous and nonferrous metals; e.g.,
  - identify and compare metals commonly used in metal fabrication occupations
  - identify metal by the sizes and shapes commonly used in the industry
- identify and compare commonly used welding rods; e.g.,
  - explain the uses, advantages and disadvantages of each
  - demonstrate the proper selection of, and the techniques for using, a variety of welding rods
- identify and describe types of commonly used fastening devices.

Students will identify the proper procedures for welding, using a variety of devices.

Welding Procedures

Oxyacetylene

Students will:

- identify the basic components of an oxyacetylene welding station
- demonstrate safe start-up and shutdown procedures for an oxyacetylene welding station
- demonstrate basic oxyacetylene welding competencies in a flat position.

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SMAW

Students will:

- identify the basic components of a SMAW station
- demonstrate safe start-up and shutdown procedures for a SMAW station
- demonstrate basic SMAW competencies in a flat position
- identify the characteristics of a good weld bead and demonstrate consistent and even stringer and weave beads
- demonstrate a series of stringer beads to create a layer of weld metal.

GMAW

Students will:

- identify the basic components of a GMAW station
- demonstrate safe start-up and shutdown procedures for a GMAW station
- demonstrate basic welding competencies in a flat position.

Resistance

Students will:

- identify the proper use of a resistance welder.

Students will identify and apply proper assembly and finishing techniques to projects.

Assembly and Finishing

Students will:

- identify the five basic joints used in welding; e.g., butt, lap, T, corner and edge
- demonstrate one or more of the five weld joints, using the flat position and a blend of coupons
- demonstrate proper assembly and finishing techniques of simple metal fabrication projects and exhibit skill in making accurate, tight fits
- identify the major features, from Material Safety Data Sheets (MSDS), on the labels of finishing products
- demonstrate the proper selection and use of fastening devices in metal fabrication
- identify and use proper surface preparation equipment
- identify, describe and demonstrate the proper application of metal finishing products.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project and identify the need for planning in metalwork
- prepare a project management plan, including budget, timeline and sample drawings
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a simple project
- transfer/lay out a cutting list, from drawings to project material
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project
- demonstrate safe processes and skills to plan, fabricate, assemble and finish a useful product.

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Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.	**Listening, Speaking, Reading and Writing** *Students will:* • read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals • identify a purpose for writing • print or write legibly, spell accurately and apply rules of grammar to construct text • listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.	**Problem Solving** *Students will:* • identify and define, and ask relevant questions to clarify, the problem • evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals

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- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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CONSTRUCTION SYSTEMS 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a construction systems career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will acquaint themselves with the use of woodworking tools, equipment and materials to prepare for and facilitate work in the trades. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in heating, ventilation and air conditioning (HVAC) systems. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in masonry. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in electrical systems. • Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in plumbing and pipe fitting.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.	**Lifelong Learning** *Students will:* • relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field • assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals • create a pathway of senior high school courses to reflect learning goals • identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will practise the skills and abilities needed to manage change.	**Adapting to Change** *Students will:* • identify goals, responsibilities and commitments • assess and reflect on the success of an action plan; e.g., – create alternative choices to deal with unexpected change – identify stressors in personal environments that they can and cannot change • identify the need for personal support and create an inventory of available personal and community sources of support.
Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths • work in and seek out a variety of roles and responsibilities • measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work • orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a construction systems career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders
- examine a brief history of contemporary practices in the trades, including:
  - heating, ventilation and air conditioning (HVAC)
  - masonry
  - electrical
  - plumbing
- identify career opportunities in the trades and name common trade-related occupations.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials; e.g., demonstrate an ability to use interactive or online programs such as the Construction Safety Training System (CSTS)
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify and practise good electrical safety habits and identify potential electrical safety hazards in the shop and at home
- identify and develop safe work habits with tools, equipment and materials used in the trades, including:
  - HVAC
  - masonry
  - electrical
  - plumbing
- select and demonstrate proper set-up procedures for ladders and scaffolding systems
- select and use common knots and hitches for hoists and rigging
- select and use appropriate hoisting and rigging equipment for common construction activities.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances in construction systems.

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Providing Service

Students will:

- identify client relationships or interactions within the field of construction systems
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will acquaint themselves with the use of woodworking tools, equipment and materials to prepare for and facilitate work in the trades.

Carpentry Orientation

Students will:

- identify basic woodworking tools and equipment; e.g.,
  - hand tools—hammer, framing square, measures
  - power tools—circular saw, mitre saw
  - compressed air equipment—nailers, spikers, staplers, concrete vibrators
- check stock for defects and squareness
- identify common fasteners and adhesives for joining wood pieces
- read and lay out simple wall framing on wall plates
- identify, cut and assemble the basic elements used in wall framing; e.g., studs, plates, lintels, sills and cripples.

Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in heating, ventilation and air conditioning (HVAC) systems.

HVAC

Students will:

- identify and describe common HVAC hand and power tools
- identify and describe basic tool maintenance, cleaning and storage procedures
- identify and describe common metalwork materials and fasteners
- identify the purpose of sketches, drawings and blueprints in the HVAC industry and identify the basic symbols used in blueprints to denote HVAC components
- identify, describe and list the major components and controls of a heating system
- demonstrate entry-level ability to perform basic maintenance on a heating system
- construct basic sheet metal fittings and duct work
- make circular and square bends in metal
- identify equipment and the basic skills required for tap and die procedures
- create a drawing on metal for project layout
- identify and demonstrate the basic skills required for brazing and soldering

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- demonstrate copper tubing practices; e.g., cut, swage, bend, flare and solder
- demonstrate the procedures required to cut, thread and connect simple black-piping projects
- identify and demonstrate the proper use of leak detectors
- identify the basic procedures for the venting of flue gas and water heaters.

Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in masonry.

Masonry

Students will:

- identify and describe common masonry hand and power tools
- identify and describe basic tool maintenance, cleaning and storage procedures
- identify common structural clay products used in masonry
- identify common concrete products used in masonry
- identify natural and artificial products used in masonry
- identify and use common mortar products
- demonstrate the ability to mix mortars and cement; e.g.,
  - spread mortar for brick and block
  - lay brick and block to line with established leads
  - construct a 90-degree brick and block lead
  - construct a simple form to hold concrete, using wood or metal
  - lay concrete in a form and demonstrate correct damping procedures
- identify and demonstrate proper finishing techniques for simple masonry projects
- demonstrate the ability to plan and construct a brick column with a concrete capstone
- identify reinforcing materials used in masonry and practise the use of basic rebar ties.

Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in electrical systems.

Electrical Systems

Students will:

- identify and describe common electrical hand and power tools
- identify and describe basic tool maintenance, cleaning and storage procedures
- identify and describe devices commonly used in residential electrical practices, e.g., switches, receptacles, light fixtures, thermostats, including:
  - boxes, covers and plates
  - common supports, anchors and fastening devices
  - common connectors, terminals and lugs
  - common electrical cable
- identify electrical safety and control devices
- demonstrate the ability to identify and reset tripped circuit breakers
- demonstrate the ability to strip electrical sheathing and connect conductors

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- identify and demonstrate basic techniques for residential wiring; e.g.,
  - identify and construct a series circuit and a parallel circuit
  - diagram and install a single pole switching system and a doorbell system
  - demonstrate the ability to test and service smoke detectors
- identify and explain common causes of power problems.

Students will develop basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in plumbing and pipe fitting.

Plumbing and Pipe Fitting

Students will:

- identify and describe common plumbing and pipe-fitting hand and power tools
- identify and describe basic tool maintenance, cleaning and storage procedures
- identify different types of pipes and where they are used; e.g.,
  - copper
  - plastic
  - black steel
  - cast iron
- identify and demonstrate pipe-cutting techniques
- identify common pipe-fitting joints and connectors
- identify and demonstrate proper pipe-threading techniques
- identify different pipe hangars and their uses
- identify the types and purposes of solder and flux
- demonstrate the soldering of copper piping joints
- identify procedures for cutting and joining plastic pipe
- identify the basic principles of the plumbing system
- identify the basic principles of water service.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- transfer/lay out a cutting list, from drawings to project material
- identify the need for planning in trade-related projects or tasks
- identify the components of a technological system; e.g., input, process, output, feedback
- apply knowledge of technological system processes to projects assigned in the course
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings
- create accurate representations of a simple project.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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CONSTRUCTION SYSTEMS 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a construction systems career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will acquaint themselves with the use of woodworking tools, equipment and materials to facilitate work in the trades. • Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in heating, ventilation and air conditioning (HVAC) systems. • Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in masonry. • Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in electrical systems. • Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in plumbing and pipe fitting.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a construction systems career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- demonstrate a basic understanding of each stakeholder's responsibilities for the successful completion of a project; i.e., helper, tradesperson, foreman, supervisor, engineer and client.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human-relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials; e.g., use interactive or online programs such as the Construction Safety Training System (CSTS)
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- practise positive electrical safety habits and identify, explain and resolve potential electrical safety hazards in a workplace or home environment
- demonstrate entry-level competence in the selection and use of ladders and scaffolding systems
- demonstrate entry-level competence in basic rigging and hoisting procedures used in construction
- develop a basic understanding of standard hand signals used when rigging and hoisting.

Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances in construction systems; e.g., examine the effects of current technological advances in the construction systems industry and explain the impact of current technology on the job descriptions of future construction systems trade workers.

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Providing Service

Students will:

- identify client relationships or interactions within the field of construction systems
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will acquaint themselves with the use of woodworking tools, equipment and materials to facilitate work in the trades.

Carpentry Orientation

Students will:

- review and demonstrate the basic knowledge and skills needed when using woodworking tools and equipment; e.g.,
  - hand tools—hammer, framing square, measures
  - power tools—circular saw, mitre saw
  - compressed air equipment—nailers, spikers, staplers, concrete vibrators
- check stock for defects and squareness
- select common fasteners and adhesives for joining wood pieces
- read and lay out wall framing on wall plates
- cut and assemble the basic elements used in wall framing; e.g., studs, plates, lintels, sills and cripples.

Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in heating, ventilation and air conditioning (HVAC) systems.

HVAC

Students will:

- demonstrate entry-level competence in selecting and using appropriate HVAC hand and power tools for a project
- demonstrate entry-level skill in the maintenance, cleaning and storage of HVAC tools and equipment
- identify tools used for cold metal work
- identify tools and equipment used for hot metal work
- examine the principles of heat transfer and refrigeration and examine pressure–temperature relationships
- identify and describe conventional heating systems; e.g.,
  - forced air
  - hot water
  - steam

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- identify nonconventional heating systems and list the advantages and disadvantages of each; e.g.,
  - electrical
  - wood burning
  - solar
- identify and describe the components of a refrigeration system; e.g.,
  - evaporator
  - condenser
  - compressor
  - metering device
- demonstrate entry-level ability to perform maintenance on a refrigeration system
- identify procedures for correctly replacing a faulty thermostat
- analyze and explain air conditioning systems; e.g.,
  - types of fittings
  - controlled humidity
  - controls
  - installations
  - electronic filters
- demonstrate entry-level ability to construct and install sheet metal fittings and duct work
- demonstrate a basic understanding of electrical principles as they pertain to HVAC systems
- identify and demonstrate basic techniques for wiring electrical control and motor circuits
- demonstrate troubleshooting on HVAC systems.

Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in masonry.

Masonry

Students will:

- demonstrate entry-level competence in selecting and using appropriate masonry hand and power tools for a project
- demonstrate entry-level skill in the maintenance, cleaning and storage of masonry tools and equipment
- list possible uses for structural clay products
- list possible uses for concrete products
- list possible uses for natural and artificial masonry products
- identify and use common masonry additives, protectants, cleaning agents, sealants and water repellants
- demonstrate entry-level ability to mix mortars and cements to project specifications
- demonstrate the layout and construction of a section of a wall with a joint reinforcement and openings, using brick and concrete block
- identify and demonstrate the use of basic tiling tools, equipment and materials
- lay out and construct a simple tiling project

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- identify the tools, equipment and materials used for stucco finishes
- demonstrate basic stuccoing procedures and finishes, including parging
- identify the tools, equipment and materials used for making concrete moulds
- demonstrate proper procedures for making simple mould projects
- demonstrate the ability to use reinforcing materials to strengthen or secure masonry projects/materials; e.g., rebar, stucco lathe.

Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in electrical systems.

Electrical

Students will:

- demonstrate entry-level competence in selecting and using appropriate electrical hand and power tools for a project
- demonstrate entry-level skill in the maintenance, cleaning and storage of electrical tools and equipment
- identify basic residential electrical devices; e.g., support brackets, anchors, fastening devices and various types of cable
- demonstrate entry-level ability to install or replace devices commonly used in residential electrical practices; e.g., switches, receptacles, bulbs, tubes and fuses
- demonstrate entry-level ability to install common boxes, covers and plates used in residential electrical practices
- demonstrate entry-level ability to install common supports, anchors and fastening devices used in residential electrical practices
- demonstrate entry-level ability to use common electrical connectors, terminals and lugs
- demonstrate the ability to choose the proper electrical cable for a project
- demonstrate entry-level ability to strip electrical sheathing and connect conductors
- diagram and install a three-way switching system
- diagram and install a combination three-way and four-way switching system
- diagram and install a multiwire branch circuit
- diagram and install special appliance circuits; e.g., 240 volts
- diagram and install a ground fault circuit interrupter (GFCI) system
- identify and demonstrate basic techniques for installing entertainment, communication and security systems
- demonstrate entry-level ability to perform basic repairs on electrical appliances
- demonstrate entry-level ability to troubleshoot power problems.

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Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in plumbing and pipe fitting.

Plumbing and Pipe Fitting

Students will:

- demonstrate entry-level competence in selecting and using appropriate plumbing and pipe-fitting hand and power tools for a project
- demonstrate entry-level skill in the maintenance, cleaning and storage of plumbing and pipe-fitting tools and equipment
- identify common plumbing adhesives and fasteners
- identify common piping and their dimensions
- demonstrate entry-level standards in the ability to measure, cut and join pipe and fittings
- identify and demonstrate basic tube cutting, bending and joining techniques
- demonstrate entry-level standards in the ability to cut and join gas-fitting pipe
- define and describe gas-fitting terms; e.g.,
  - BTUs
  - natural gas
  - propane gas
  - fuel oil
- recognize the characteristics of a gas flame
- recognize and demonstrate safety practices specific to gas fitting
- identify control systems and valves used by gas fitters
- identify the procedures used to connect and disconnect gas pipe and valves to a gas source
- demonstrate the ability to identify, operate and replace simple controls; e.g.,
  - room thermostats
  - fan switches
  - safety switches
  - 100 percent shut-off valves
- demonstrate entry-level ability to troubleshoot basic plumbing and pipe-fitting problems.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- explain the importance of an effective project-planning process
- build a project from a supplied blueprint
- draw basic blueprints for simple projects
- demonstrate the ability to inventory tools, equipment and materials
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a simple project
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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METAL FABRICATION 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a metal fabrication career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will demonstrate a basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication. • Students will demonstrate correct welding procedures, using a variety of devices. • Students will demonstrate proper assembly and finishing techniques when creating projects.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a metal fabrication career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials; e.g., use interactive or online programs such as the Construction Safety Training System (CSTS)

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify and practise good electrical safety habits and identify potential electrical safety hazards in the shop and at home
- recognize the health and safety hazards associated with a variety of welding procedures; e.g., identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during welding procedures.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances in metal fabrication.

Providing Service

Students will:

- identify client relationships or interactions within the field of metal fabrication
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/ industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will demonstrate a basic knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- demonstrate the consistent and accurate use of common metal fabrication tools; e.g.,
  - demonstrate the accurate use of measuring and layout tools
  - develop and demonstrate entry-level skills with fastening, cutting and finishing hand tools
  - demonstrate the correct handling and safe use of stationary machines and equipment
- demonstrate correct storage practices and locations for tools, equipment and materials
- demonstrate proper care of tools and equipment
- explain criteria for the selection of tools appropriate for specific projects
- demonstrate straight and curved cuts on metal.

Materials

Students will:

- identify samples of sheet stock by their appearance and properties and select appropriate sheet metal for a project; e.g., explain criteria for the selection of metal for specific projects
- identify appropriate fastening devices for specific applications; e.g., explain criteria for the selection of appropriate fastening devices.

Students will demonstrate correct welding procedures, using a variety of devices.

Welding Procedures

Oxyacetylene

Students will:

- identify and name the components of an oxyacetylene welding station
- demonstrate safe start-up and shutdown procedures for oxyacetylene cutting equipment
- demonstrate proper use of the components of an oxyacetylene welding station
- demonstrate oxyacetylene welding competencies; e.g.,
  - in vertical and horizontal welding positions
  - weld butt, lap, T, corner and edge joints using welding coupons
- demonstrate pierced holes and straight, irregular and bevelled cuts.

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SMAW

Students will:

- identify and name the basic components of a SMAW welding station
- demonstrate safe start-up and shutdown procedures for a SMAW welding station
- demonstrate basic SMAW welding competencies; e.g.,
  - in vertical and horizontal welding positions
  - weld butt, lap, T, corner and edge joints using welding coupons
- identify the characteristics of a good weld bead and self-evaluate their ability to produce welds
- identify the characteristics and properties of four common electrodes.

GMAW

Students will:

- identify and name the basic components of a GMAW welding station
- demonstrate safe start-up and shutdown procedures for a GMAW welding station
- demonstrate basic GMAW welding competencies; e.g.,
  - in vertical and horizontal positions
  - weld butt, lap, T, plug, corner and edge joints using welding coupons
- identify the characteristics of a good weld bead and self-evaluate their ability to produce welds; e.g., identify variables that can affect weld quality
- identify set-up procedures for flux-cored arc welding (FCAW) (optional).

Students will demonstrate proper assembly and finishing techniques when creating projects.

Assembly and Finishing

Students will:

- identify and select appropriate tools and materials to make a product
- demonstrate the proper selection of, and the techniques for using, common fastening devices
- explain criteria for the selection of appropriate media used to finish a simple project; e.g.,
  - identify major features, from Material Safety Data Sheets (MSDS), on the labels of finishing products
  - explain the advantages of making accurate, tight fits
  - make accurate, tight fits continuously
- identify and describe appropriate finishing techniques
- explain criteria for the selection of surface preparation equipment
- demonstrate the ability to prepare surfaces for applying finishes
- explain the proper application of metal finishing products.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- transfer/lay out a cutting list, from drawings to project material
- identify the need for planning in metal fabrication
- identify the components of a technological system; e.g., input, process, output, feedback
- apply knowledge of technological system processes to projects assigned in the course
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings
- create an accurate representation of a simple project.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

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Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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METAL FABRICATION 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a metal fabrication career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication. • Students will demonstrate entry-level welding procedures, using a variety of devices. • Students will demonstrate entry-level assembly and finishing techniques when creating projects.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a metal fabrication career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human-relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials; e.g., use interactive or online programs such as the Construction Safety Training System (CSTS)
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances in metal fabrication; e.g., examine the effects of current technological advances in the metal fabrication industry and explain the impact of current technology on the job descriptions of future metal fabrication trade workers.

Providing Service

Students will:

- identify client relationships or interactions within the field of metal fabrication
- identify services required or provided
- collect necessary information to complete a purchase or to fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will demonstrate entry-level knowledge of, and the skills required to properly use, the tools, equipment and materials used in metal fabrication.

Tools, Equipment and Materials

Tools and Equipment

Students will:

- demonstrate consistent and accurate use of common metal fabrication tools; e.g.,
  - develop and demonstrate entry-level skills with measuring, layout, fastening, cutting and finishing hand tools
  - select appropriate tools for a variety of applications
- demonstrate consistent safe handling and use of stationary machines and equipment
- display consistent and correct storage procedures for tools, equipment and materials
- demonstrate the consistent, proper care of tools and equipment
- select tools appropriate for specific projects
- display, continuously, accurate and high-quality straight and curved cuts on metal
- identify and differentiate between types of destructive and nondestructive testing
- evaluate their personal work through destructive testing.

Materials

Students will:

- select appropriate metal stock for use in projects
- identify and select different types of carbon steel for a variety of applications
- demonstrate a spark test to identify a variety of ferrous and nonferrous metals
- explain criteria for the selection of carbon steel for specific projects
- understand basic metallurgy concepts
- demonstrate the consequences of tempering and cold quenching
- select appropriate fastening devices for a variety of applications.

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Students will demonstrate entry-level welding procedures, using a variety of devices.

Welding Procedures

Oxyacetylene

Students will:

- demonstrate consistent and safe start-up and shutdown procedures for an oxyacetylene welding station
- demonstrate basic oxyacetylene welding competencies; e.g.,
  - use appropriate welding positions based on the task, including the overhead position
  - weld butt, lap, T, corner and edge joints, using welding coupons
- identify applications appropriate for brazing; e.g., describe the advantages and disadvantages of brazing and braze welding
- demonstrate basic brazing competencies; e.g.,
  - braze in all positions
  - weld lap and T joints, using welding coupons
- demonstrate consistent, high-quality pierced holes and straight, irregular and bevel cuts.

SMAW

Students will:

- demonstrate consistent and safe start-up and shutdown procedures for a SMAW welding station
- demonstrate basic SMAW welding competencies; e.g.,
  - use appropriate welding positions based on the task, including the overhead position
  - weld butt, lap, T, corner and edge joints, using welding coupons
- identify the characteristics of a good weld bead and self-evaluate their ability to create welds
- select appropriate weld electrodes based on their characteristics and properties.

GMAW

Students will:

- demonstrate consistent and safe start-up and shutdown procedures for a GMAW welding station
- demonstrate basic GMAW welding competencies; e.g.,
  - use appropriate welding positions based on the task, including the overhead position
  - weld butt, lap, T, plug and corner joints, using welding coupons
- identify the characteristics of a good weld bead and self-evaluate their ability to create welds
- identify set-up procedures for flux-cored arc welding (FCAW) (optional).

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GTAW

Students will:

- demonstrate consistent and safe start-up and shutdown procedures for a GTAW welding station
- demonstrate GTAW welding competencies; e.g.,
  - in all positions
  - weld butt, lap, T and corner joints, using welding coupons; e.g., mild steel and/or aluminum and/or stainless steel
- identify the characteristics of a good weld bead and self-evaluate their ability to create welds; e.g., identify variables that can affect weld quality.

Plasma Arc

Students will:

- identify and name the basic components of a plasma arc cutting station
- identify safe start-up and shutdown procedures for a plasma arc cutting station.

Carbon Arc

Students will:

- identify and name the basic components of a carbon arc cutting station
- identify safe start-up and shutdown procedures for a carbon arc cutting station.

Students will demonstrate entry-level assembly and finishing techniques when creating projects.

Assembly and Finishing

Students will:

- select appropriate tools and materials to construct a product
- demonstrate installation techniques for common fastening devices
- perform appropriate welding procedures based on project requirements
- select appropriate media used to finish projects; e.g., identify major features, from Material Safety Data Sheets (MSDS), on the labels of finishing products
- select and demonstrate appropriate finishing techniques; e.g., grinding, chipping, buffing, sanding
- select appropriate surface preparation equipment for projects
- demonstrate consistent and accurate joint preparation before welding
- demonstrate the entry-level ability to prepare surfaces for the application of a variety of finishes
- identify and apply appropriate finishing products.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials
- identify the need for planning in metal fabrication
- identify the purpose of sketches, drawings and blueprints
- identify procedures and conventions for drawing sketches and orthographic, isometric and scale drawings
- plan and sketch basic shop drawings and create an accurate representation of a simple project
- transfer/lay out a cutting list, from drawings to project material.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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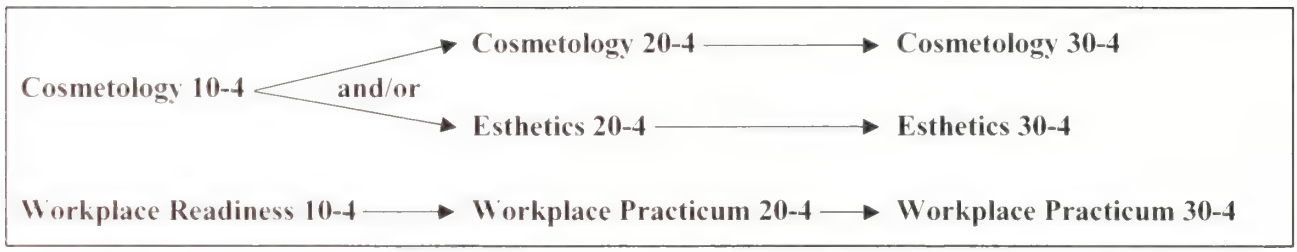
KNOWLEDGE AND EMPLOYABILITY
COSMETOLOGY

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Cosmetology courses are designed to teach occupational knowledge and skills for entry-level positions in cosmetology and esthetics by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Cosmetology 10-4 provides a basis for, and an introduction to, Cosmetology 20-4 and Esthetics 20-4.
- Cosmetology 20-4 and 30-4 focus on haircutting, dressing and care.
- Esthetics 20-4 and 30-4 focus on make-up and skin care.
- Students interested in cosmetology should be encouraged to take both courses at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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COSMETOLOGY 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a cosmetology career environment. • Students will develop safe workplace practices and procedures. • Students will be introduced to technology to develop a high-quality product or service. • Students will develop knowledge and skills to care for the hair and scalp properly. • Students will develop an understanding of hairstyling practices and procedures. • Students will develop an understanding of nail care and manicuring procedures. • Students will develop an understanding of skin care and the procedures for applying facials.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a cosmetology career environment.

Career Awareness

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and salon activities
  - treat the salon area with care and with attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during salon services; e.g.,
  - identify safety device locations in the salon or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and salon conditions

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  - identify personal protective equipment (PPE); e.g., proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize health and safety hazards associated with salon services and procedures.

Students will be introduced to technology to develop a high-quality product or service.

Products and Service

Tools and Equipment

Students will:

- identify and use, safely, common hand and power tools and equipment used in salons
- handle and dispose of, properly, environmentally hazardous materials used in salons.

Technology Integration

Students will:

- explore new and emerging products and technological advances used in cosmetology.

Providing Service

Students will:

- identify client relationships or interactions within the field of cosmetology
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- identify the importance of customer or client service to all businesses/industries
- identify professional practices and work habits
- strive to meet and exceed the client's expectations.

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Personal and Professional Practices

Students will:

- define grooming in relation to personal hygiene
- describe the factors affecting grooming choices and practices
- investigate and describe grooming products and implements; e.g., demonstrate practices contributing to their personal grooming
- demonstrate good interpersonal communication skills; e.g.,
  - practise appropriate telephone use when providing information or setting up appointments
  - record information and keep client records
  - keep a daily log.

Safety and Sanitation

Students will:

- identify and follow safe and sanitary practices
- protect clients' clothing and property while performing services
- maintain a clean and safe work area
- sanitize and return equipment and materials to their proper storage area
- dispose of waste materials in an environmentally safe manner.

Bacteriology

Students will:

- define bacteriology
- identify and distinguish between pathogenic and nonpathogenic organisms
- define the shapes of bacteria cocci, bacilli and spirilli
- demonstrate practices used in cosmetology to control the spread of infections and diseases in the workplace.

Students will develop knowledge and skills to care for the hair and scalp properly.

Hair and Scalp Care

Students will:

- describe the structure of hair
- identify the three layers of hair; i.e., cuticle, cortex and medulla
- describe the internal and external factors that may affect the hair and scalp
- list and use a variety of hair and scalp care products and implements to perform hair, scalp, shampooing and conditioning treatments
- perform treatments in a safe and sanitary manner
- describe and identify basic hair and scalp conditions; e.g., normal, oily, dry and chemically processed
- perform a shampoo procedure, following the correct order of steps
- apply and remove conditioner according to instructions.

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Students will develop an understanding of hairstyling practices and procedures.

Hairstyling

Students will:

- define and describe hairstyling
- describe the use of appropriate tools, equipment and materials for hairstyling and finishing procedures
- develop and practise a repertoire of terminology specific to hairstyling
- describe techniques used to style hair
- identify the preparation of long hair prior to designing and styling
- distinguish between ropes, knots, twists and braids
- create and secure seven long hair techniques
- describe the advantages and disadvantages of wearing long hair
- prepare, section and hold hair to create on-base, half-base and off-base curls, using rollers and curling irons
- manipulate blow dryers and curling irons to form hair, creating a variety of curls, waves and texture formations.

Students will develop an understanding of nail care and manicuring procedures.

Basic Manicuring

Students will:

- define manicure and manicurist
- identify and describe basic nail structure
- describe the factors affecting nail conditions
- identify the four common nail shapes
- list the steps in a plain manicure procedure
- identify, describe and list tools, equipment and other materials required to perform a plain manicure
- perform basic manicures for clients.

Students will develop an understanding of skin care and the procedures for applying facials.

Skin Care and Facials

Students will:

- explain the main functions of the skin
- describe and label the basic layers of the skin
- describe the appendages of the skin
- list the steps in a facial procedure
- identify materials available to care for the skin
- greet, orient and analyze a client for a skin care procedure
- demonstrate proper facial procedures on clients.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals

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- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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COSMETOLOGY 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a cosmetology career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will demonstrate appropriate hair- and scalp-care procedures. • Students will demonstrate an understanding of styling practices and procedures. • Students will demonstrate the appropriate procedures for permanently waving hair. • Students will demonstrate haircutting procedures. • Students will demonstrate effective hair-colouring procedures.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a cosmetology career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize harassment in a cosmetology setting, identify strategies to deal with it and practise appropriate responses to such situations.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Tools and Equipment

Students will:

- identify and use, safely, common hand and power tools and equipment used in salons.

Technology Integration

Students will:

- identify new and emerging products and technological advances used in cosmetology.

Providing Service

Students will:

- identify client relationships or interactions within the field of cosmetology
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/ industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Personal and Professional Practices

Students will:

- describe the relationship between a well-groomed appearance and a positive self-concept and develop a personal grooming plan
- demonstrate good interpersonal communication skills; e.g.,
  - practise appropriate telephone use by providing information or setting up appointments
  - record information and keep records of client services
  - keep a daily log
- read directions on products
- read and interpret cosmetology magazines and promotional materials
- estimate quantities, areas and volumes
- total bills for service, including tax
- demonstrate the process of accepting payment in various forms
- use angles and elevations
- make linear estimations
- practise personal hygiene.

Safety and Sanitation

Students will:

- follow safe and sanitary practices, including the use and basic maintenance of tools, equipment and materials
- sanitize and return tools and equipment to their proper storage area
- handle and dispose of, properly, environmentally hazardous materials used in salons; e.g.,
  - reread Material Safety Data Sheets (MSDS)
  - read publications on the safe handling of toxic substances within the salon
  - read labels on chemical containers to check their uses and hazards.

Students will demonstrate appropriate hair- and scalp-care procedures.

Hair and Scalp Care

Students will:

- define and describe the relationships between hair condition and scalp condition
- identify and describe the purpose and application of various hair- and scalp-care products and technologies
- define and describe the factors that identify the condition of the hair; e.g., identify the conditions that can be treated by the stylist
- consult with the client about services and products recommended for shampooing, conditioning and/or scalp treatments
- perform a hair- and scalp-care service, including client consultation, preparation and product selection based on proper hair and scalp analysis
- perform intense hair repair treatments, following directions provided by the teacher and/or the manufacturer.

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Students will demonstrate an understanding of styling practices and procedures.

Hairstyling

Students will:

- identify and describe types of pin curls
- identify the parts of a pin curl; i.e., base, stem and circle
- construct and secure designs using each pin curl type
- design a hairstyle using one or more pin curl techniques
- style a hair design by combing out constructed and dried pin curls
- identify and describe the types of rollers available and the advantages and disadvantages of each
- construct and secure designs using metallic, thermal or mesh rollers
- style and finish roller designs
- style and finish a variety of sets using blow dryers and curling irons
- style and finish a variety of sets using a blow dryer and different sizes and styles of round brushes.

Students will demonstrate the appropriate procedures for permanently waving hair.

Chemical Texturizing

Students will:

- describe the purposes of chemical-texturizing wraps
- identify and describe the chemical-texturizing technology currently available
- identify and describe the major processes involved in chemical texturizing
- identify and describe the steps in the physical process of chemically texturizing hair
- identify the shapes and sizes of conventional chemical-texturizing rods
- describe the uses and effects of rods with different shapes and sizes
- discuss the advantages and disadvantages of different wrapping techniques
- identify the order in which sections of hair should be blocked and wrapped
- wrap permanent wave designs using acceptable techniques.

Students will demonstrate haircutting procedures.

Basic Haircutting

Students will:

- explain and identify the geometrical lines in haircutting
- identify and describe types of haircuts and haircutting techniques
- explain and describe the principle of elevation as it applies to haircutting
- identify and describe implements used to cut and thin hair; e.g., demonstrate the proper handling, use and maintenance of each cutting implement
- select and prepare the necessary implements and draping supplies
- identify and describe the uses of different sectioning patterns
- determine the length of hair to be removed and the elevation of the cut on different areas of the head.

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Students will demonstrate effective hair-colouring procedures.	**Hair Colouring** *Students will:* • define hair colouring • identify and describe the reasons for colouring hair • identify and describe the relationships among primary, secondary, tertiary and complementary colours • define related terms; e.g., tone, shade, level • distinguish between adding colour and removing colour • identify and distinguish among the types of hair colouring available today • list examples of colouring agents • describe the purpose of a patch/predisposition test • perform a patch/predisposition test • list the reasons for a strand test • describe how to perform a strand test • list the steps for performing the various colour procedures available today • list all the requirements for analyzing the client's hair to determine what colour to use • perform colour procedures selected by the teacher.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets the expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals • estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area • use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.	**Computer Operations and Computer Applications**
	
	Students will:
	• demonstrate appropriate language and etiquette when using information technology
	• demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
	• demonstrate basic computer operations to complete a task; e.g.,
	  – use basic keyboarding skills
	  – store, organize and retrieve information correctly
	  – locate and select information and ideas using appropriate technology and information systems; e.g., Internet
	  – access, send and retrieve e-mail and attachments
	• demonstrate procedures for connecting and using audio, video and digital equipment
	• demonstrate procedures for sending and receiving faxes and setting up a fax machine
	• demonstrate procedures for copying and printing documents.

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COSMETOLOGY 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a cosmetology career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate effective waving techniques to the satisfaction of the customer. • Students will demonstrate effective haircutting procedures to the satisfaction of the customer. • Students will demonstrate effective colouring and removal techniques. • Students will demonstrate effective hairstyling techniques and design. • Students will demonstrate an understanding of the business operations of a salon. • Students will demonstrate an understanding of how to gain employment in a salon.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a cosmetology career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- describe the impact of alcohol and drug use on the worker, workplace and society
- describe and explain the importance of familiarity with safety device locations and procedures in the workplace; e.g., eyewash stations, emergency shut-off, fire extinguisher, emergency exits and evacuation route
- practise positive electrical safety habits and identify, explain and resolve potential electrical safety hazards in a workplace or home environment
- recognize harassment in a cosmetology setting; e.g.,
  - identify strategies for dealing with harassment
  - identify agencies that deal with harassment situations.

Students will use technology to develop a high quality product or service.

Products and Service

Tools and Equipment

Students will:

- identify and use, safely, common hand and power tools and equipment used in salons.

Technology Integration

Students will:

- use new and emerging products and technological advances needed in cosmetology; e.g.,
  - examine the effects of current technological advances in the cosmetology industry and explain the impact of current technology on the job descriptions of future cosmetology trade workers.

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Providing Service

Students will:

- identify client relationships or interactions within the field of cosmetology
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Personal and Professional Practices

Students will:

- demonstrate good interpersonal communication skills; e.g.,
  - practise appropriate telephone use by providing information or setting up appointments
  - record information and keep records of client services
  - keep a daily log
- read directions on products
- read and interpret cosmetology magazines and promotional materials
- estimate quantities, areas and volumes
- total bills for service, including tax
- demonstrate the process of accepting payment in various forms
- use angles and elevations
- make linear estimations
- perform and paraphrase a client consultation
- model personal hygiene.

Safety and Sanitation

Students will:

- follow safe and sanitary practices, including the use and basic maintenance of tools, equipment and materials
- maintain a safe, clean work area
- sanitize and return tools, equipment and materials to their proper storage area
- dispose of waste materials in an environmentally safe manner
- review local and provincial health and safety regulations.

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Students will demonstrate effective waving techniques to the satisfaction of the customer.

Chemical Texturizing

Students will:

- identify the chemical properties and pH values of chemical-texturizing solutions
- identify how acid and alkaline permanent waves are processed and neutralized
- identify and follow the manufacturer's instructions
- list the steps involved in giving a chemical-texturizing service
- perform chemical texturizing services
- wrap designer permanent waves.

Students will demonstrate effective haircutting procedures to the satisfaction of the customer.

Haircutting

Students will:

- identify new trends in haircutting for women; e.g., create a portfolio of new unisex trends
- greet each client by name and show them to the work area
- consult with the client and analyze their hair and scalp to determine appropriate haircutting services
- demonstrate different haircutting techniques
- identify haircutting trends for men
- perform male haircuts.

Students will demonstrate effective colouring and removal techniques.

Colour/Removal

Students will:

- define colour removal, bleaching and decolourizing
- identify colour-removal products and agents
- describe the uses, advantages and disadvantages of available colour-removal products
- describe levels of colour removal
- distinguish among colour-addition, colour-removal and decolourizing processes
- distinguish between the use of hair lighteners as single-process colouring agents and their use as part of double-process colouring agents
- distinguish between products used to remove natural colour from the hair and those used to remove artificial colour
- describe the effect of hydrogen peroxide in colour-removal processes
- describe the effect of hair lighteners on the hair and scalp
- identify and describe the factors that may prohibit the application of bleaches or colour-reducing agents
- describe the effects of over-bleaching hair
- define and describe the processes used to highlight, streak or foil hair
- analyze a client's preferred style and make decisions regarding where to locate highlights or streaks

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- analyze the hair and scalp to determine their suitability for applications of colour-removal agents or bleaches
- access and arrange necessary products and application tools
- prepare colour-removal products according to the manufacturer's instructions
- drape and prepare a client for a wet service
- describe and perform a strand test
- mix and apply colour-removal agents or bleach to one or more strands, according to the manufacturer's instructions
- facilitate the chemical process of the agent
- perform bleaching applications
- perform highlighting techniques
- perform decolourizing techniques
- monitor test strands to assess the degree of colour removal achieved
- remove the lightening agent from the hair and scalp according to the manufacturer's instructions
- apply finishing/conditioning/toning rinse, where necessary
- prepare hair for forming and finishing.

Students will demonstrate effective hairstyling techniques and design.

Hairstyling and Long Hair Design

Students will:

- wave and curl hair by using a combination of styling techniques
- finish hair by using a variety of techniques
- prepare and finish long hair to style into:
  - chignons
  - french twists
  - a variety of knots
  - braids
  - rolls
- complete styling techniques on a client/model.

Students will demonstrate an understanding of the business operations of a salon.

Salon Management and Design

Students will:

- design a floor plan
- view different salons and interview their employees
- design a colour scheme for a salon
- design a business card and/or an advertisement for a salon
- create a price list
- identify the equipment needed in a salon and estimate the start-up costs required for a new salon
- identify various forms of employee payment options
- identify inventory counting and recording practices
- identify product providers and choose a selection of products needed to stock a salon

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- identify and calculate product mark-up rates
- recognize various methods of payment; e.g., debit, credit card, cash, cheques
- schedule and record appointments
- estimate the cost of supplies
- prepare a budget.

Students will demonstrate an understanding of how to gain employment in a salon.

Marketing You

Seeking Employment

Students will:

- prepare a portfolio that includes:
  - résumés and cover letters
  - diplomas
  - awards
  - achievements
  - letters of reference
  - a summary of education
  - community affiliations
  - before and after photographs of services performed on clients, models or mannequins
  - a brief statement as to why they have chosen a career in cosmetology
  - any relevant information they think is important
- list job search opportunities
- describe networking
- list guidelines to follow when networking with local salons
- prepare, review and role-play the interview process
- list questions to consider asking during an interview
- list and discuss behaviours that should be practised prior to an interview
- list and discuss legal and illegal questions that may or may not be asked in an interview
- list the personal qualities that will help ensure a successful career.

On the Job

Students will:

- list and discuss the most important things to consider when servicing clients
- list and discuss the habits of successful team players
- list and give examples of how one can generate a greater income.

Retailing and You

Students will:

- list and discuss sales principles
- discuss how to build a client base
- list and design at least three marketing techniques that will keep clients coming back.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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ESTHETICS 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within an esthetics career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will demonstrate the appropriate application of theatrical make-up. • Students will demonstrate the application of make-up. • Students will demonstrate effective nail-care procedures and develop skills related to nail art. • Students will perform skin-care procedures. • Students will develop an understanding of body therapy practices and procedures.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within an esthetics career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- handle and dispose of, properly, environmentally hazardous materials used in salons; e.g.,
  - read Material Safety Data Sheets (MSDS)
  - read publications on the safe handling of toxic substances within the salon
  - read labels on chemical containers to check their uses and hazards
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize harassment in an esthetics setting.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances used in esthetics.

Providing Service

Students will:

- identify client relationships or interactions within the field of esthetics
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Personal and Professional Practices

Students will:

- describe the relationship between a well-groomed appearance and a positive self-concept and develop a personal grooming plan
- demonstrate good interpersonal communication skills; e.g.,
  - practise appropriate telephone use by providing information or setting up appointments
  - record information and keep records of client services
  - keep a daily log
- read directions on products
- read and interpret cosmetology magazines and promotional materials
- estimate quantities, areas and volumes
- total bills for service, including tax

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- demonstrate the process of accepting payment in various forms
- use angles and elevations
- make linear estimations
- practise personal hygiene.

Safety and Sanitation

Students will:

- follow safe and sanitary practices, including the use and basic maintenance of tools, equipment and materials
- protect clients' clothing and property while performing services
- maintain a clean and safe work area
- sanitize and return tools, equipment and materials to their proper storage area; e.g.,
  - wash all towels, sheets and blankets after each use
  - clean the bed, chairs and countertops with a sterilizing agent registered with the Environmental Protection Agency (EPA)
- dispose of waste materials in an environmentally safe manner.

Students will demonstrate the appropriate application of theatrical make-up.

Theatrical Make-up

Students will:

- identify and describe the purpose of theatrical make-up for:
  - stage performers
  - photographic images
  - television and movie performers
- describe theatrical make-up practices used to enhance or change images; e.g.,
  - corrective make-up
  - character make-up
  - adornments and prostheses
- explain the relationship between basic cosmetic practices and theatrical make-up practices
- distinguish between corrective make-up and character make-up
- explain the professional relationship between the performer and the theatrical make-up artist
- identify primary, secondary, tertiary and complementary colours and their relationship on a colour wheel
- define and describe characteristics of colour; e.g.,
  - pigment
  - tints
  - hue
  - tones
  - intensity
  - shades
  - value

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- design a colour wheel
- identify and describe the various items and materials, e.g., tools, equipment and supplies, usually found in a theatrical make-up kit
- identify and describe the purpose of various types of theatrical make-up
- sketch character designs and include information about the make-up to be applied
- perform make-up applications.

Students will demonstrate the application of make-up.

Make-up

Students will:

- describe the main objective of facial make-up
- list the factors that must be taken into consideration when applying make-up
- identify common implements used in cosmetics
- describe how primary, secondary and tertiary colours are made
- create a colour wheel
- describe complementary colours
- distinguish between warm and cool colours
- identify and describe different facial shapes and facial features
- define and describe day, evening and corrective make-up techniques
- distinguish between corrective and regular make-up techniques
- explain the factors that may determine the client's need for corrective make-up services
- greet each client, consult with them, analyze their needs and recommend appropriate make-up applications
- assemble all necessary equipment, materials and supplies
- prepare the work area for facial care and make-up application; e.g.,
  - prepare the skin and design and create daytime make-up applications
  - prepare the skin and design and create evening make-up applications
  - prepare the skin and apply corrective make-up applications.

Students will demonstrate effective nail-care procedures and develop skills related to nail art.

Nail Care and Nail Art

Students will:

- identify and prepare equipment, cosmetics and implements required to perform basic and spa manicure services
- greet each client, consult with them, analyze their needs and recommend appropriate nail care and nail art techniques
- list the procedures for a spa manicure
- perform spa manicures
- list and describe nail art equipment, cosmetics and supplies
- access and prepare equipment and cosmetics for nail art applications
- perform a minimum of four nail art designs, using a variety of nail art techniques.

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Students will perform skin-care procedures.

Skin Care

Students will:

- consult with clients to determine their skin care needs
- prepare the client and perform client-approved, safe and sanitary skin care services
- prepare the work area to promote skin care services and products; e.g., assemble all necessary equipment, materials and implements
- drape each client as appropriate for the service
- perform skin care procedures
- remove draping and assist in refinishing the client's hairstyle
- establish and complete the client record card.

Students will develop an understanding of body therapy practices and procedures.

Body Therapy

Students will:

- define the roles and responsibilities of massage therapists and other related professionals
- name and describe massage movements
- list and describe body therapy products, masks and muds
- list and describe the essential oils that have:
  - antiseptic properties
  - eucalyptus properties
  - anti-inflammatory properties
  - soothing/relaxation qualities
  - stimulating qualities
- list essential oils that may be harmful or beneficial
- greet each client and perform a client consultation
- advise the client of service(s) available for body therapy treatments
- prepare and drape the client
- perform body therapy treatments.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instruction
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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ESTHETICS 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within an esthetics career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate effective nail services to the satisfaction of the customer. • Students will demonstrate effective nail enhancement procedures. • Students will demonstrate effective pedicure services. • Students will demonstrate effective make-up application procedures. • Students will demonstrate effective hair-removal techniques. • Students will demonstrate an understanding of how to gain employment in a salon. • Students will develop an understanding of the business operations of a salon.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within an esthetics career environment.

Career Awareness

Preparation

Student will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- handle and dispose of, properly, environmentally hazardous materials used in salons; e.g.,
  - read Material Safety Data Sheets (MSDS)
  - read publications on the safe handling of toxic substances within the salon
  - read labels on chemical containers to check their uses and hazards
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- describe the impact of alcohol and drug use on the worker, workplace and society
- describe and explain the importance of familiarity with safety device locations and procedures used in the workplace; e.g., eyewash stations, emergency shut-off, fire extinguisher, emergency exits and evacuation route
- practise positive electrical safety habits and identify, explain and resolve potential electrical safety hazards in a workplace or home environment
- recognize harassment in a cosmetology setting; e.g.,
  - identify strategies for dealing with harassment
  - identify agencies that deal with harassment situations.

Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances needed in esthetics; e.g., examine the effects of current technological advances in the esthetics industry and explain the impact of current technology on the job descriptions of future esthetics trade workers.

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Providing Service

Students will:

- identify client relationships or interactions within the field of esthetics
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Personal and Professional Practices

Students will:

- demonstrate good interpersonal communication skills; e.g.,
  - practise appropriate telephone use by providing information or setting up appointments
  - record information and keep records of client services
  - keep a daily log
- read directions on products
- read and interpret cosmetology magazines and promotional materials
- estimate quantities, areas and volumes
- total bills for service, including tax
- demonstrate the process of accepting payment in various forms
- use angles and elevations
- make linear estimations
- perform and paraphrase a client consultation
- model personal hygiene.

Safety and Sanitation

Students will:

- follow safe and sanitary practices, including the use and basic maintenance of tools, equipment and materials
- sanitize and return tools, equipment and materials to their proper storage areas
- dispose of waste materials in an environmentally safe manner
- perform first aid for minor cuts
- maintain a clean, safe work area.

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Students will demonstrate effective nail services to the satisfaction of the customer.

Nail Service

Customer Preparation

Students will:

- meet, greet and orient a client for manicure services
- discuss the client's nail care needs and recommend the services available to address those needs
- prepare the work area for client-approved service(s).

Performing Services

Students will:

- perform manicure and related services; e.g.,
  - manicures
  - spa manicures
  - French manicures
  - nail art design
- advise clients how they may maintain the health and groomed appearance of hands, feet, nails and nail art
- maintain accurate records of client services.

Students will demonstrate effective nail enhancement procedures.

Nail Enhancement

Students will:

- identify various nail enhancement techniques
- identify and describe the materials and implements that may be used to perform nail enhancement services
- prepare the materials and implements required for nail enhancement services
- perform nail enhancement services to the client's satisfaction.

Students will demonstrate effective pedicure services.

Pedicure Services

Students will:

- describe the purpose of the pedicure
- identify and describe the basic structure of the feet
- describe the diseases and disorders that may affect the feet
- analyze feet and determine their suitability for pedicure services
- identify equipment and supplies for a pedicure procedure
- list the steps in a pedicure process
- prepare the pedicure work area
- demonstrate the reflexology techniques used when massaging feet.

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Students will demonstrate effective make-up application procedures.

Make-up

Application(s)

Students will:

- explain the factors that may determine the client's need for regular or corrective make-up services
- identify and describe currently available corrective make-up, including usual application techniques and related technology
- demonstrate the proper application of common make-up cosmetics; e.g.,
  - design and create daytime make-up on clients/models
  - design and create evening make-up on clients/models
- perform corrective make-up techniques to the client's satisfaction
- meet, greet and orient the client for make-up services
- perform facial care procedures
- recommend make-up and skin care products for home use
- establish a client record card and update the card after each service.

Students will demonstrate effective hair-removal techniques.

Hair Removal

Students will:

- distinguish between temporary and permanent methods of hair removal and describe the advantages and disadvantages of each
- describe the advantages and disadvantages of various physical, chemical and electrical methods of hair removal
- identify and describe body areas and conditions that must not be treated with hair-removal methods
- identify the steps in temporary hair-removal procedures; i.e.,
  - shaving
  - tweezing
  - chemical depilatories
  - waxing
  - sugaring
- perform hair-removal treatments.

Students will develop an understanding of how to gain employment in a salon.

Marketing You

Seeking Employment

Students will:

- prepare a portfolio that includes:
  - résumés and cover letters
  - diplomas
  - awards
  - achievements
  - letters of reference
  - a summary of education

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  - community affiliations
  - before and after photographs of services performed on clients, models or mannequins
  - a brief statement as to why they have chosen a career in esthetics
  - any relevant information they think is important
- list job search opportunities
- describe networking
- list guidelines to follow when networking with local salons
- prepare, review and role-play the interview process
- list the personal qualities that will help ensure a successful career.

On the Job

Students will:
- list and discuss the most important things to consider when servicing clients
- list and discuss the habits of successful team players
- list and give examples of how one can generate a greater income.

Retailing and You

Students will:
- list and discuss sales principles
- discuss how to build a client base
- list and design at least three marketing techniques that will keep clients coming back.

Students will develop an understanding of the business operations of a salon.

Salon Management and Design

Students will:
- design a floor plan
- view different salons and interview their employees
- design a colour scheme for a salon
- design a business card and/or an advertisement for a salon
- create a price list
- create a schedule for recording appointments
- recognize various methods of client payment
- prepare a budget for salon operating costs; e.g.,
  - identify start-up costs
  - identify various forms of employee payment options
  - identify inventory accounting and recording practices
  - identify product providers and choose a selection of products needed to stock a salon
  - identify and calculate product mark-up rates.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instruction
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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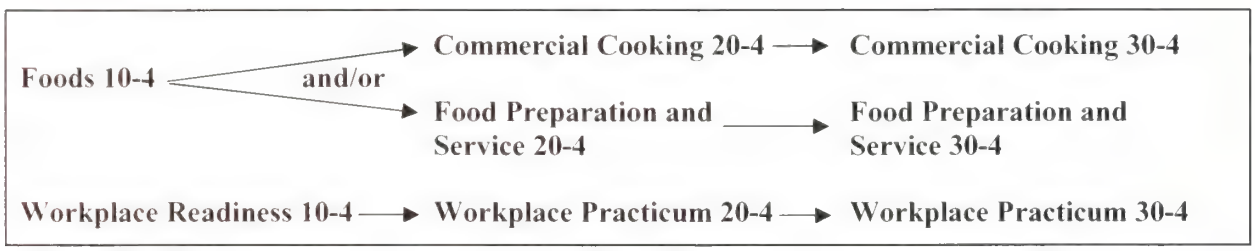
KNOWLEDGE AND EMPLOYABILITY FOODS

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Foods courses are designed to teach occupational knowledge and skills for entry-level positions in commercial cooking and food preparation and service by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Foods 10-4 is designed for students who are interested in the food service industry and/or would like to learn to cook for themselves and others. Foods 10-4 explores the role of the commercial cook, and others who work in the industry, to assist students in gaining some experience toward their first job.
- Foods 10-4 provides a basis for, and an introduction to, Commercial Cooking 20-4 and Food Preparation and Service 20-4.
- Commercial Cooking 20-4 and 30-4 focus on banquet and reception food preparation and service.
- Food Preparation and Service 20-4 and 30-4 focus on basic food preparation and customer service.
- Students interested in foods should be encouraged to take both courses at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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FOODS 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a foods career environment. • Students will develop safe workplace practices and procedures. • Students will enhance their ability to provide excellent client service and a high-quality product through proper sanitation and equipment use. • Students will understand the value of accurate measurement processes in the planning and preparation stages of cooking. • Students will prepare, and evaluate the nutrition of, fast food products. • Students will develop service-related attitudes and skills to perform basic clean-up and service duties. • Students will develop a basic understanding of nutrition to plan and prepare well-balanced meals. • Students will develop basic cooking techniques to prepare a variety of meals. • Students will develop a knowledge of basic baking procedures and practices.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.

Lifelong Learning

Students will:

- identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation
- set learning goals and identify how formal/informal learning can help them achieve goals
- develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will develop an ability to manage change effectively.

Adapting to Change

Students will:

- identify available support resources and assess potential barriers
- prepare an action plan to proactively respond to a particular change or challenge.

Students will explore and discover personal aptitudes and interests related to occupational opportunities.

Career Development

Students will:

- create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options
- identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site
- describe how work contributes to individual goals
- explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a foods career environment.

Career Development

Exploration

Students will:

- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- describe the various jobs and careers available in the food service industry in kitchens, dining rooms, coffee shops, restaurants, cafeterias, fast food restaurants, hotels and catering; e.g., head chef, sous chef, line cook, busing and wait staff, hostess/host
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary
- discuss the pathways and competencies required to progress from entry-level jobs (e.g., bus person, dishwasher, cook's helper, cashier) to full-time permanent careers (e.g., wait staff, cook, shift manager, front-end management, chef, executive chef and general manager)
- discuss the types of establishments where the public can purchase food to eat in or take out, including coffee shops, specialty restaurants, hotels, fast food restaurants, cafeterias, corner stores and others
- discuss methods by which a person can become trained/educated for one of these jobs or careers; e.g., apprenticeship programs offered across the province, various technical schools that offer one- and two-year courses in food service and hospitality, courses offered at the senior high school level and on-the-job training.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the laboratory area with care and with attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

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Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions
  - identify personal protective equipment (PPE)
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize the health and safety hazards associated with food production procedures and identify important standards (codes) and governing bodies in the food industry
- demonstrate and apply principles of kitchen safety and the health and welfare of peers; e.g.,
  - understand and demonstrate the prevention of cross-contamination in the kitchen
  - identify and make proper use of safety hand-washing procedures when entering the kitchen and rewash to prevent safety risks to themselves and others
  - follow all the safety rules
- demonstrate and apply knowledge of Hazardous Household Product Symbols (HHPS).

Students will enhance their ability to provide excellent client service and a high-quality product through proper sanitation and equipment use.

Products and Service

Tools and Equipment

Students will:

- describe and demonstrate the uses of kitchen hand tools and utensils; e.g.,
  - provide the names and proper uses of various knives in the kitchen; e.g., chef's knife, paring knife, butcher's knife, pizza knife, cleaver and slicer
  - demonstrate the ability to name and use hand tools; e.g., cook's fork, tongs, spoons, ladles, skimmer, turners, spatulas, whips, melon ball cutter, meat tenderizer and brushes
  - identify tableware, including dishware, flatware and glassware

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- describe and demonstrate the uses of various cooking equipment and appliances; e.g.,
  - understand and work safely with cooking equipment; e.g., sauté pans, sauce pots, frying skillets, double boilers, colanders and stock pots
  - display competence when working with kitchen appliances; e.g., toasters, blenders, milkshake machines, electric openers, scales and hand mixers
- demonstrate confidence when using power and gas equipment; e.g., slicing machines, dishwashers, grills, ovens and deep-fryers
- identify storage and cleaning procedures for tools and equipment.

Proper Handling of Foods and Storage

Students will:

- discuss the correct handling of food products to ensure good sanitation and correct refrigeration practices and use checklists to ensure safe food handling procedures are followed
- demonstrate proper food storage to ensure food quality; e.g.,
  - store food items to be prepared in the correct locations; e.g., freezers, dry storage rooms
  - store hot foods at the correct temperature
  - demonstrate first-in-first-out (FIFO) practice, placing new food products safely behind older stock and cycling fresh, frozen and dry products.

Sanitation

Students will:

- demonstrate the ability to clean and disinfect all equipment and areas of the kitchen properly and safely and to the standards required by public health agencies, including the use of accepted cleaning procedures, practices and chemicals to sanitize tables, cutting boards, hand tools, power equipment, floors and aprons.

Students will understand the value of accurate measurement processes in the planning and preparation stages of cooking.

Measurement and the Use of Recipes

Students will:

- demonstrate the correct use of a variety of measuring tools; e.g.,
  - volume in imperial (teaspoons, tablespoons, cups) and metric (millilitres, litres)
  - weight in imperial (ounces, cups, pounds) and metric (grams and kilograms)
- produce quality bakery products using recipes and measurements correctly; e.g., cookies, cakes, pies, quick breads, muffins and yeast goods
- identify the method of measurement used in the recipe; i.e., imperial or metric
- demonstrate problem-solving and mathematics skills when converting recipes; e.g., reduce yield by $\frac{1}{4}$ and $\frac{1}{2}$ or increase yield by doubling and tripling.

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Students will prepare, and evaluate the nutrition of, fast food products.

Fast Foods

Students will:

- name and provide information about different types of fast food restaurants; e.g., pizza, chicken, fish, ice cream, burgers
- identify entry-level jobs in a fast food restaurant; e.g., front-end staff, cook, cashier, bus person, supervisor, cook's helper, clean-up staff
- identify the pros and cons of working in the fast food industry; e.g.,
  - pros: part-time employment, money, experience, self-esteem, little work experience needed
  - cons: low wages, late hours, less time for homework and friends
- weigh the pros and cons of eating in a fast food restaurant; e.g.,
  - pros: cheap, fast—do not have to cook, taste, outings/socializing
  - cons: poor nutrition, high fat, sodium and calories
- compare and contrast foods prepared in the fast food industry; e.g., identify products found in a fast food restaurant and judge them based on several factors; e.g., cost, portion size, taste, wholesomeness, quality, personal choice
- prepare a variety of fast foods.

Students will develop service-related attitudes and skills to perform basic clean-up and service duties.

Service

Students will:

- identify the meaning of service in relation to the food industry
- recognize the importance and influence of verbal and nonverbal behaviour
- recognize the need for personal hygiene
- identify greeting practices
- describe the types of food service available in eating establishments; e.g.,
  - fast food
  - drive through
  - pickup and delivery
  - buffet
  - family
  - fine dining
  - cafeteria
- identify busing service procedures and duties for catering; e.g.,
  - folding napkins
  - refilling condiments
  - setting covers on tables
  - handling tableware properly
  - removing crumbs from the table
  - refilling water glasses.

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Students will develop a basic understanding of nutrition to plan and prepare well-balanced meals.

Nutrition

Students will:

- demonstrate the ability to use *Canada's Food Guide to Healthy Eating* to choose healthful foods to prepare for each meal
- write a daily menu that is healthy for Canadian teens; e.g.,
  - grain products: 5–12 servings
  - vegetables: 5–10 servings
  - milk products: 3–4 servings
  - meat and alternatives: 2–3 servings
- demonstrate knowledge of the basic food groups and portion sizes for each group.

Students will develop basic cooking techniques to prepare a variety of meals.

Basic Cooking Techniques

Students will:

- demonstrate knowledge of a variety of cooking techniques and styles
- describe and use various pieces of kitchen equipment, including ovens, stoves, grills, burners, steamers, deep-fryers, broilers, pots, pans and utensils, while preparing and cooking items in the kitchen
- develop problem-solving skills related to time and temperature
- demonstrate and apply knowledge of terms often used in cooking procedures
- demonstrate and apply basic skills while preparing and cooking meat and poultry dishes, using both moist and dry cooking techniques and recognizing the degrees of doneness
- demonstrate the ability to cook fresh, frozen and canned vegetables, using various cooking techniques while maintaining wholesomeness, flavour and texture.

Students will develop a knowledge of basic baking procedures and practices.

Baking Procedures

Students will:

- demonstrate and apply basic bakery skills while preparing and cooking baked goods; e.g.,
  - identify baking ingredients, hand tools, equipment and small wares
  - describe and make use of measuring equipment, both by liquid and volume, to bake products correctly
- demonstrate the ability to use equipment available to students correctly; e.g., a dough hook, mixing bowls, mixers, a pastry brush and oven mitts
- demonstrate an understanding of baking ingredients; e.g., cake flour, bread flour, shortening, baking powder, baking soda, types of sugars, leaveners
- use problem-solving skills while working with recipes to provide large and small batches of baked goods.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals

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- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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COMMERCIAL COOKING 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a commercial cooking career environment. • Students will demonstrate safe workplace practices and procedures. • Students will demonstrate basic knowledge of sanitation practices and proper use of the tools, equipment and materials used in commercial food preparation. • Students will identify nutritional practices for planning and preparing meals. • Students will identify baking practices and procedures. • Students will understand and demonstrate practices and procedures for cooking meat and poultry. • Students will identify practices and procedures in cold food preparation. • Students will identify practices and procedures in fast food preparation.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.	**Self-development** *Students will:* • re-evaluate an action plan to develop strengths and talents • use strengths and talents to achieve personal goals • clarify acceptable and appropriate behaviours for specific activities and roles • act ethically in personal, community and workplace contexts and accept the consequences of their actions.
Students will understand risks and be accountable for their actions.	**Risk Management** *Students will:* • follow health and safety procedures; e.g., at home, at school, in the community and in the workplace • identify potential hazards, take corrective action and develop and practise action plans to ensure safety • practise personal emergency responses • assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.	**Interpersonal Communication** *Students will:* • assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g., – listen without interrupting – contribute to be heard – disagree courteously – accept conflicting opinions – use appropriate body language • assess verbal and nonverbal communication strategies • apply social norms to build specific relationships • demonstrate the ability to accept praise and/or criticism.
Students will demonstrate the ability to understand and work within the culture of a group.	**Building Community** *Students will:* • interact with others in a courteous manner • accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction • identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a commercial cooking career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- provide a checklist of the knowledge, skills and attitudes required to secure and retain a position in the food service industry; e.g.,
  - identify sources of support for investigating and finding work
  - gather application forms from possible employers and complete them for practice
  - determine how to apply for and retain these entry-level positions and role-play job interviews
  - discuss a future career by choosing a possible long-term career and investigating it; e.g., determine education and experience required, the pros and cons of these positions, locations of employment, salaries and benefits available
  - discuss the generic skills required to obtain a position and to prosper in a chosen field and determine the lifelong learning skills that will be required to maintain the position into the future
- identify post-secondary career opportunities; e.g.,
  - journeyman cook, executive chef, journeyman baker, pastry chef, dining room manager and hotel manager and discuss the educational pathways, experience required and benefits of these positions
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment; e.g.,
  - demonstrate the ability to perform basic personal first aid when dealing with small cuts, simple burns and nonserious falls
  - identify procedures for correctly controlling small fires in the kitchen
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task and dress to work safely; e.g., remove watches and loose jewellery; wear clothing that cannot get caught on equipment; wear shoes that have solid soles, covered toes and offer protection from spills and slipping
- demonstrating knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate and apply the principles of kitchen safety while preparing foods, using equipment and otherwise working in the kitchen or in public areas; e.g.,
  - work safely in the kitchen, warning others of safety concerns, clean up spills right away and watch out for the safety of other workers
  - demonstrate the ability to show others how to remain safe on the job
  - use safety procedures, guards and protective equipment when working with power machines and direct others to use safe procedures.

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Students will demonstrate basic knowledge of sanitation practices and proper use of the tools, equipment and materials used in commercial food preparation.

Products and Service

Sanitation in the Professional Kitchen

Students will:

- use cleaning chemicals in the correct manner and discuss the dangers involved with these products
- use correct food-handling practices to keep food safe and out of danger zones; e.g., handle and store food properly using first-in-first-out (FIFO) principles, handle and store prepared food to maintain wholesomeness and quality
- demonstrate the ability to avoid cross-contamination of food products
- demonstrate a sound understanding of food poisoning; e.g.,
  - discuss causes and effects of improper food handling and storage
  - speculate on the possible causes of food poisoning and methods of prevention.

Care, Cleaning and Maintenance of Kitchen Equipment

Students will:

- operate and check all kitchen equipment, according to safe, daily operational standards; e.g.,
  - use, clean and maintain, safely and correctly, equipment such as mixers, slicers and power equipment
  - demonstrate an awareness of the correct operation and use of deep-frying equipment; e.g., clean the deep-fryers safely to avoid spills, burns and falls; return the equipment to the line as quickly as possible in a safe manner
  - display competence in the operation, care and cleaning of hot station equipment
  - check temperatures correctly of walk-in, free-standing and reach-in coolers/refrigerators and freezers and report problems to supervisors.

Students will identify nutritional practices for planning and preparing meals.

Nutrition in the Professional Kitchen

Students will:

- demonstrate an understanding, based on *Canada's Food Guide to Healthy Eating*, of the four food groups, portion servings and sizes, depending on the parties served
- list two to three good sources of each of the seven nutrient groups; i.e., carbohydrates, protein, fat, vitamins, minerals, water and fibre
- demonstrate an understanding of which foods can be harmful and explain which foods to limit; e.g., sugar, fats, cholesterol
- understand the relationship between diet, exercise and health; e.g.,
  - discuss how a proper diet, correct eating habits and moderate exercise work together to aid in maintaining an ideal weight and in keeping the heart, lungs, muscles and general appearance in good condition.

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Students will identify baking practices and procedures.

Bake Shop

Students will:

- demonstrate an understanding of baking ingredients and how they are used in the commercial bake shop; e.g.:
  - all-purpose and cake flour
  - shortening, butter and lard
  - white, brown and confectionery sugars
  - chemical agents; e.g., baking powder, baking soda and baking ammonia
- demonstrate the ability to understand and use bakery hand tools and equipment correctly; e.g., biscuit cutter, flour brush, flour sifter, rolling pin, strapped bread ban, palate knife, dough cutter, bench knife, balance scale and larger equipment such as mixers, bakers ovens, proofers and shelf racks
- produce various baked goods to the required standards, quality and quantity; e.g., breads, cakes, pies, cookies
- demonstrate an understanding of bakery terms, e.g., creamability, double-action baking powder, enriched flour, evaporated milk, fermentation, frozen eggs, gluten, hydrogenization, milling, self-rising flour, waxiness, whole wheat flour, yeast and others.

Students will understand and demonstrate practices and procedures for cooking meat and poultry.

The Hot Station

Students will:

- demonstrate knowledge of the types of meats and poultry usually prepared in commercial cooking; e.g.,
  - recognize wholesale and retail cuts of meat
  - demonstrate knowledge of methods employed to cook various cuts of meat
  - demonstrate the ability to handle, prepare, cook and serve various types of poultry safely; e.g., chicken, turkey and duck
- understand and employ the correct cooking methods for various cuts of beef; e.g., dry cooking for tender cuts (baking, barbequing or frying), moist-dry cooking for less tender cuts (stewing, pot roasting or simmering); e.g.,
  - demonstrate knowledge of the various levels of doneness used in the cooking procedure
  - demonstrate the ability to choose a cut of meat and to use a meat chart correctly
  - use a thermometer correctly to determine the doneness of meat
- demonstrate understanding and working knowledge of terms used while working in the hot station; e.g., au jus, breading, braising, broiling, blanch, chemical reaction, collagen, elastin, enzymes, grilling, grill marks, mirepoix, medium rare, rare, ragout, roasting, sautéing, scoring, well done, yield
- demonstrate the safe and correct use of hand tools and cooking equipment in the hot station.

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Service

Students will:
- demonstrate the servicing of food offline and in mise en place for service
- demonstrate plate service.

Students will identify practices and procedures in cold food preparation.

The Garde Manger (Cold Food)

Students will:
- demonstrate the ability to discuss the types of foods prepared in the garde manger and the purposes of this station
- prepare appetizers, canapés and hors d'oeuvres correctly as required for a buffet, including dips, spreads, relishes, cocktails, fruit cups
- demonstrate the preparation of a variety of salads used for different occasions and times of day; e.g.,
  - prepare a variety of fresh salads; e.g., chef's, caesar, vegetable, fruit, meat and cooked salads
  - name and use a variety of fresh greens; e.g., endive, curly, bib, leaf, iceberg, romaine, spinach and watercress
  - create salad dressings correctly, in the volume required, according to a recipe
- demonstrate the ability and knowledge to prepare fillings for and then create luncheon and fancy sandwiches; e.g., salad, decorative, pinwheel, decker, rollups, pocket, tea and coloured sandwiches
- demonstrate the ability to produce dessert salads
- demonstrate the ability to name and work proficiently with garde manger tools and demonstrate an understanding of the terms specific to the garde manger.

Service

Students will:
- demonstrate mise en place for cold service.

Students will identify practices and procedures in fast food preparation.

Fast Foods

Students will:
- discuss the pros and cons of fast food restaurants; e.g., value, types of meals, quality of products, reasons for their popularity
- demonstrate the ability, using various fast food menus, to choose nutritional foods with good value for the cost
- show an understanding of the nutritional values of various fast food items by breaking them down using *Canada's Food Guide to Healthy Eating*
- use learned abilities to produce various fast foods for sale or consumption; e.g., hamburgers, pizza, fish and fries.

Service

Students will:
- demonstrate an understanding of teamwork and team building as they relate to fast food service.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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COMMERCIAL COOKING 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a commercial cooking career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate proper sanitation and use of the tools, equipment and materials used in commercial food preparation. • Students will demonstrate nutritional practices and procedures for planning and preparing meals. • Students will demonstrate baking practices and procedures for a variety of pastries. • Students will demonstrate cooking practices and procedures for a variety of entrées. • Students will demonstrate entry-level garde manger practices and procedures when preparing cold foods. • Students will identify kitchen management practices, procedures and responsibilities.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.	**Lifelong Learning** *Students will:* • identify learning opportunities related to learning goals, commitments and resources; e.g., – identify opportunities for further education/training – locate needed financial support systems – locate needed personal support systems • practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals • create a plan that demonstrates continuous learning; e.g., – analyze requirements for graduation and for further education/training – modify a learning plan to reflect requirements and opportunities.
Students will manage change effectively to support their goals.	**Adapting to Change** *Students will:* • prioritize and assign resources to meet commitments and goals • prioritize commitments and goals to achieve a balanced lifestyle • redefine an action plan as situations change; e.g., – use adaptive strategies – redefine personal goals – select personal coping mechanisms • access available and appropriate sources of support • identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a commercial cooking career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Chef

Students will:

- discuss the methods by which a student can be trained to become a chef, including an apprenticeship program, technical schools, working in the industry and senior high school classes
- demonstrate a sound understanding of the various positions and types of chefs in the industry; e.g., saucier, entremetier, garde manger and pâtissier
- understand and discuss other professional positions in the food service industry; e.g., food and beverage managers, maitre d'hôtel, captain, general mangers and owners.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace

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- demonstrate acceptable verbal and nonverbal communication skills
- practise personal and public hygiene procedures
- demonstrate entry-level competency in tools and equipment usage
- use supplies correctly
- follow good storage practices
- demonstrate pride in their work performance
- demonstrate a willingness to work
- demonstrate respect for others
- follow accepted principles and procedures
- recognize opportunities for further education/training.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate knowledge of the rules of kitchen safety and take a leadership role in modelling safety practices; e.g.,
  - work safely in the kitchen; watch others for safety concerns; monitor floors for spills; practise knife and equipment safety; warn others of unsafe situations; pay careful attention to possible cuts, burns, falls and machine injuries
  - perform simple first aid for themselves and others; e.g., flush burns with cold water, bandage cuts, direct others to a supervisor in case of serious injury
  - be alert to possible safety concerns for guests; e.g., food safety; chipped, cracked and broken dishware or silverware.

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Students will demonstrate proper sanitation and use of the tools, equipment and materials used in commercial food preparation.

Products and Service

Sanitation

Students will:

- demonstrate knowledge of sanitation in the professional kitchen and take a leadership role by modelling good sanitation practice
- lead by example in the role of health and hygiene in the professional kitchen
- demonstrate a good understanding of the regulations and inspection practices enforced by the regional health authorities in their certification of restaurants.

Food-borne Illness

Students will:

- demonstrate knowledge of the dangers of food-borne illnesses, how they are caused, how they are carried and how to prevent them from further growth in the professional kitchen; e.g.,
  - store foods properly in the refrigerator, freezer or dry storerooms or in hot storage in steam tables or chaffing dishes
  - discuss various types of food-borne illnesses and cite types of diseases, incubation periods, symptoms, courses, food involved and preventive measures.

Students will demonstrate nutritional practices and procedures for planning and preparing meals.

Nutrition

Students will:

- discuss the importance of providing sound nutritional meals to guests, both for the benefit of the clients and the business
- demonstrate the ability to prepare daily menus, including breakfast, lunch and dinner, and understand and discuss new food choices; e.g., cook to preserve nutrients; serve foods low in all fats, sugars, sodium and cholesterol and serve foods high in vitamins, minerals, essential amino acids and fibre
- understand and discuss various vegetarian diets and the nutritional concerns of these diets
- demonstrate the ability to choose fruits and vegetables for their wholesomeness; e.g.,
  - flowers rich in vitamins A and C; e.g., broccoli and cauliflower
  - leaves high in vitamin C; e.g., cabbage, spinach, kale
  - seeds high in protein; e.g., corn, beans, nuts
- understand terms specific to the field of nutrition and use these terms in a discussion of the nutritional needs of the public; e.g., allergies, amino acids, calories, carbohydrates, fibre, nutrients, pasteurization, processing, starches, trans fats and others.

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Students will demonstrate baking practices and procedures for a variety of pastries.

Classic Baking and Pastries

Students will:

- demonstrate the ability to use various pieces of bakery equipment and tools correctly; e.g., piping bags, star tubes, sheet and loaf pans, spatulas, dough cutters, whips, measuring tools, mixers, proofers, ovens and fryers
- demonstrate an understanding of the six types of ingredients used in the professional bakery and the general purposes of each; i.e., leaveners, sweeteners, stabilizers, tenderizers, flavourings, thickeners
- produce quality yeast doughs and prepare several types of breads and buns from a basic dough; e.g., baguettes, focaccia loaf, buns, multigrain bread and brioche
- prepare quality baked goods; e.g.,
  - produce sweet doughs for cinnamon buns, doughnuts, cream horns or Napoleons
  - use recipes with some assistance
  - demonstrate the ability, with assistance, to produce quality choux pastry
- demonstrate an understanding of basic cooking terms; e.g.,
  - barding, basting, frenched, mirepoix, truss, broiling, parboiling and wok.

Students will demonstrate cooking practices and procedures for a variety of entrées.

The Hot Station

Students will:

- demonstrate the ability, while working as part of a team, to cook various types of entrées; e.g., beef, pork, chicken and fish dishes
- demonstrate the ability to complete mise en place for stocks, soups and sauces
- understand the purpose and varieties of stocks in the kitchen
- produce quality stocks in the quantities required
- demonstrate the ability to produce a clear, cream and chowder soup
- demonstrate the ability to rehydrate, prepare and cook grains successfully
- possess an understanding of the various types of rices and how to handle each to prepare quality rice dishes; e.g., rice pilaf, risotto and wild rice
- demonstrate the ability to use dry grains correctly to produce quick breads and cereals
- demonstrate the ability to prepare and cook various types of pasta; e.g., egg pasta, lasagne noodles, ravioli, spaghetti and cannelloni
- demonstrate the ability to use steaming procedures to cook a variety of foods.

Service

Students will:

- demonstrate mise en place for service
- demonstrate the serving of food offline and in buffet and plate service.

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Students will demonstrate entry-level garde manger practices and procedures when preparing cold foods.

The Garde Manger (Decoration)

Students will:

- demonstrate the ability to use tools of the trade to create various items in the garde manger; e.g., lemon zester, citrus peeler, shell cutter, paring knife, chef's knife, floating blade peeler, melon baller, pastry bag and others
- demonstrate the skills required to produce simple to complex plate garnishes; e.g., radish roses, celery curls, tomato roses and others
- provide assistance in producing garnishes for cold buffets, under direction and supervision; e.g., decorated hams, turkeys, salmons, seafood displays and others
- produce a variety of complex salads; e.g., chef's salad, caesar salad, jellied salad, vegetable salad and others
- demonstrate an understanding of and produce canapés and tea and rolled sandwiches; e.g., pinwheel, multicolour and finger sandwiches using a variety of spreads, including egg, fish, cheese and others
- use appropriate terms in the garde manger; e.g., aspic, appetizers, pantry, mousse, terrine truffles, quiche and others.

Students will identify kitchen management practices, procedures and responsibilities.

Kitchen Management

Students will:

- demonstrate an understanding of food grading, labelling and inspection and explain their importance when purchasing food products; e.g.,
  - demonstrate the ability to receive food stuffs on invoice from wholesalers; e.g., to check the weights, sizes, quality, freshness and wholesomeness of the product and the correctness of the invoice
  - demonstrate an understanding of grading, canned, fresh or frozen foods
  - demonstrate the ability to choose fresh fruits, vegetables, seafood and meats and maintain their wholesomeness
- demonstrate an understanding of refrigerator and freezer storage times and temperatures; e.g.,
  - demonstrate the ability to correctly store foods by understanding which types of food to refrigerate, which to correctly freeze and which to place in dry storage
  - show an understanding of how long each type of food can be kept without risk of spoilage or loss of wholesomeness
  - demonstrate an understanding of the causes of food spoilage and the means to prevent these losses; e.g., low temperature, high temperature, removal of moisture, exclusion of air, adding preservatives and commercial irradiation

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- plan, successfully, a one-day menu for a full-service restaurant or dining room; e.g.,
  - choose a type of restaurant and theme and prepare a luncheon and a dinner menu
  - discuss and consider the variety, balance, flavours, textures and appearance of the food
  - understand and consider kitchen capabilities, equipment and personnel limitations and the availability of food
  - understand and demonstrate menu accuracy, using a variety of food choices and nutritional concerns.

Service

Students will:

- identify procedures for accepting payment; e.g.,
  - use the components of a cash register
  - make change
  - apply taxes and tips.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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FOOD PREPARATION AND SERVICE 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a food preparation and service career environment. • Students will demonstrate safe workplace practices and procedures. • Students will enhance their abilities to provide excellent client service and a high-quality product. • Students will develop an understanding of nutrition and food choices. • Students will measure ingredients correctly and follow recipes when cooking. • Students will follow recipes to produce a variety of goods. • Students will identify procedures for purchasing and storing food.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.	**Lifelong Learning** *Students will:* • relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field • assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals • create a pathway of senior high school courses to reflect learning goals • identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will practise the skills and abilities needed to manage change.	**Adapting to Change** *Students will:* • identify goals, responsibilities and commitments • assess and reflect on the success of an action plan; e.g., – create alternative choices to deal with unexpected change – identify stressors in personal environments that they can and cannot change • identify the need for personal support and create an inventory of available personal and community sources of support.
Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths • work in and seek out a variety of roles and responsibilities • measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work • orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a food preparation and service career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- provide a checklist of the knowledge, skills and attitudes required to secure and retain a position in the food service industry; e.g.,
  - gather application forms from possible employers and complete them for practice
  - determine how to apply for and retain these entry-level positions and role-play job interviews
  - discuss a future career by choosing a possible long-term career and investigating it; e.g., determine education and experience required, the pros and cons of these positions, locations of employment, salaries and benefits available
  - discuss the generic skills required to obtain a position and prosper in their chosen field
  - determine the lifelong learning skills that will be required to maintain the position into the future
- identify post-secondary opportunities; e.g.,
  - investigate the broad range of lifelong careers in the food service industry and discover post-secondary education pathways toward these careers; e.g., journeyman cook, executive chef, journeyman baker, pastry chef, dining room manager, hotel manager
  - discuss the educational pathways, experience required and benefits of these positions
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

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Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues related to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate and apply the principals of kitchen safety and sanitation; e.g.,
  - work safely in the kitchen
  - warn others of safety concerns
  - clean up spills right away
  - watch over the safety of others.

Students will enhance their abilities to provide excellent client service and a high-quality product.

Products and Service

Food Service

Students will:

- review the types of food services in eating establishments
- diagram the physical facility and outline the service areas; e.g.,
  - demonstrate an understanding of the organization and the flow of the food service area
  - observe the service facilities and discuss reasons for the arrangement of equipment, small wares, beverage dispensers, hot stations and others
- demonstrate the ability to work on a station with the goal of increasing personal productivity and gaining knowledge through observation and participation
- demonstrate the ability to complete a personal performance appraisal after a period of time spent in service; e.g., analyze their performance appraisal with a supervisor
- review busing procedures

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- demonstrate tray service practices; e.g.,
  - load and carry a serving tray properly
  - handle and set tableware appropriately
  - use a tray stand
- identify types of covers (place settings)
- wait on tables effectively; e.g.,
  - take orders
  - place orders
  - receive and check orders
  - serve orders
  - record and calculate prices
- perform proper beverage service; e.g.,
  - identify types of beverages and appropriate glassware
  - pour a variety of liquids properly
  - identify provincial liquor regulations and their applications.

Kitchen Sanitation

Students will:

- demonstrate and apply knowledge of Hazardous Household Product Symbols (HHPS), use cleaning chemicals in the correct manner and discuss the dangers involved with these products
- use correct food-handling practices to keep food safe
- demonstrate the ability to avoid cross-contamination of food products
- demonstrate knowledge of food poisoning and discuss causes and effects of improper food handling and storage.

Tools and Equipment

Students will:

- operate and check all kitchen equipment, according to safe, daily operational standards; e.g.,
  - use, clean and maintain, safely and correctly, equipment such as mixers, slicers and power equipment
  - check temperatures correctly of walk-in, free-standing and reach-in coolers/refrigerators and freezers and report problems to supervisors.

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Students will develop an understanding of nutrition and food choices.

Nutrition/Meal Planning

Students will:

- demonstrate comprehension of *Canada's Food Guide to Healthy Eating*; e.g.,
  - discuss the number of servings in each food group required each day for various groups of people; e.g., children, teens, adults and the elderly
  - prepare breakfast, lunch and dinner menus to provide wholesome, nutritious meals with the correct number of servings from each food group
- identify sources of vitamins and minerals
- discuss foods and diets and diseases caused by food and lifestyle choices; e.g.,
  - demonstrate a working knowledge of diseases related to improper eating habits, including heart attack, stroke, anorexia nervosa, bulimia and osteoporosis
  - demonstrate the ability to study a peer's diet chart (what they ate during the week), discuss nutritional problems and diet concerns and make suggestions to improve the peer's food choices
- demonstrate a working knowledge of food additives and their effects on food products.

Students will measure ingredients correctly and follow recipes when cooking.

Measurement and the Use of Recipes

Students will:

- review the correct use of measuring tools
- use measurement in imperial and metric units
- demonstrate problem-solving skills when converting recipes; e.g.,
  - demonstrate the ability to convert recipes from imperial to metric and vice versa
  - demonstrate problem-solving and mathematics skills by reducing recipes by $\frac{1}{4}$ and $\frac{1}{2}$ or by doubling and tripling.

Students will follow recipes to produce a variety of goods.

Cooking Techniques

Students will:

- demonstrate the ability to work with assistance to prepare products
- demonstrate the ability to cook fast foods and full meals quickly and safely
- work as team members to prepare menu items
- demonstrate the ability to create side, entrée and dessert salads; e.g., identify a variety of dressings that accompany salads
- demonstrate the ability to produce a variety of soups and sauces
- demonstrate the ability to prepare various types of pasta and noodles
- identify the various types of rice and demonstrate how to prepare rice dishes
- demonstrate an understanding of baking ingredients and their uses

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- produce quality baked goods
- demonstrate knowledge of types of meats
- demonstrate the ability to prepare and cook various meat products
- demonstrate the ability to cook breakfast items; e.g., bacon, eggs, pancakes, omelettes, French toast
- demonstrate the ability to prepare luncheon and dinner items such as hamburgers, fish and chips, sandwiches.

Students will identify procedures for purchasing and storing food.

Purchasing and Storage

Purchasing

Students will:

- demonstrate knowledge of terms related to ordering and food storage
- participate in the inventory and ordering of food and supply products
- demonstrate an understanding of food grading, labelling and inspection related to the purchasing of food products
- demonstrate the ability to choose fresh fruits, vegetables, seafood and meats and maintain their wholesomeness.

Storage

Students will:

- apply food storage knowledge to protect food stuffs from spoilage, waste or cross-contamination; e.g.,
  - handle and store foods properly using first-in-first-out (FIFO) principals (new supplies to the back)
  - demonstrate the ability to correctly store foods and understand which types of food to refrigerate, which to freeze and which to place in dry storage
  - identify how long each type of food can be kept without risk of spoilage or loss of wholesomeness
  - explain the six methods of food preservation; i.e., low temperature, high temperature, removal of moisture, exclusion of air, adding preservatives and commercial irradiation.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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FOOD PREPARATION AND SERVICE 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a food preparation and service career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate an ability to provide excellent client service and a high-quality product. • Students will demonstrate an understanding of nutrition and make healthy food choices. • Students will demonstrate the accurate measurement of the ingredients indicated in recipes to produce a variety of food products. • Students will demonstrate effective cooking techniques to produce a variety of food products. • Students will demonstrate decision-making skills when purchasing and storing food.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.	**Lifelong Learning** *Students will:* • identify learning opportunities related to learning goals, commitments and resources; e.g., – identify opportunities for further education/training – locate needed financial support systems – locate needed personal support systems • practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals • create a plan that demonstrates continuous learning; e.g., – analyze requirements for graduation and for further education/training – modify a learning plan to reflect requirements and opportunities.
Students will manage change effectively to support their goals.	**Adapting to Change** *Students will:* • prioritize and assign resources to meet commitments and goals • prioritize commitments and goals to achieve a balanced lifestyle • redefine an action plan as situations change; e.g., – use adaptive strategies – redefine personal goals – select personal coping mechanisms • access available and appropriate sources of support • identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a food preparation and service career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Food Service Workers

Students will:

- understand and discuss professional positions in the food service industry; e.g., food and beverage managers, maitre d'hôtel, captain, general managers and owners
- discuss a future career by choosing a possible long-term career and investigating the education and experience required, the pros and cons of these positions, locations of employment and salaries and benefits available
- discuss and possess an understanding of the tasks performed by food services workers; e.g.,
  - discuss the generic skills required to obtain a position and prosper in their chosen field
  - determine the lifelong learning skills that will be required to maintain the position into the future.

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Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment use
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues related to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- demonstrate knowledge of the rules of kitchen safety and sanitation and take a leadership role in modelling safety practices; e.g.,
  - work safely in the kitchen; watch others for safety concerns; monitor floors for spills; practise knife and equipment safety; warn others of unsafe situations; pay careful attention to possible cuts, burns, falls and machine injuries
  - demonstrate first aid procedures to address injuries
  - be alert to possible safety concerns; e.g., food safety, damaged dishware or silverware.

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Students will demonstrate an ability to provide excellent client service and a high-quality product.

Products and Service

Food Service

Students will:

- demonstrate an understanding of the differences between dining services and compare and contrast dining service, food selection, décor and price; e.g.,
  - produce a list of restaurants found in the community or neighbouring communities and divide the restaurants into groups; e.g., fast foods, coffee shops, specialty restaurants, dining rooms
- demonstrate an understanding of, and discuss various terms related to, the formal dining experience; e.g., terms such as appetizer, hors d'oeuvre, chef, captain, host/hostess, formal service table settings, meal courses and menu formats
- discuss the steps involved in formal plate service; e.g., presentation of appetizers, hot and cold soups, salads, entrées, desserts and beverage service
- demonstrate an understanding of various positions associated with formal dining; e.g., waiter/waitress, head waiter, hostess/host, chef and others
- perform the tray service duties of a:
  - bus person
  - waiter/waitress
  - head waiter
- set tableware and covers (place settings) appropriate to the menu and type of service
- serve cold and hot beverages properly
- practise taking meal and beverage orders from guests
- record and calculate meal costs for guests
- present a tabulated cheque to guests
- perform cashier duties and handle a variety of payments effectively.

Kitchen Sanitation

Students will:

- demonstrate and apply knowledge of Hazardous Household Product Symbols (HHPS), use cleaning chemicals in the correct manner and discuss the dangers involved with these products
- use correct food-handling practices to keep food safe
- demonstrate the ability to avoid cross-contamination of food products
- demonstrate knowledge of food poisoning and discuss causes and effects of improper food handling and storage.

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Tools and Equipment

Students will:

- operate and check all kitchen equipment, according to safe, daily operational standards; e.g.,
  - use, clean and maintain, safely and correctly, equipment such as mixers, slicers and power equipment
  - check temperatures correctly of walk-in, free-standing and reach-in coolers/refrigerators and freezers and report problems to supervisors.

Students will demonstrate an understanding of nutrition and make healthy food choices.

Nutrition/Meal Planning

Nutrition

Students will:

- discuss the digestion process (how food becomes fuel) and describe the process of digestion, starting with chewing and ending with the excretion of waste
- discuss the importance of providing nutritional meals; e.g.,
  - demonstrate the ability to discuss the seven nutrient groups required by the body, daily nutritional intake and sources of these nutrients; i.e., carbohydrates, protein, fat, vitamins, minerals, water and fibre
  - understand the new trends in nutrition; e.g., serving foods high in nutritional value, cooking to preserve flavour and goodness
- demonstrate a sound understanding of the new diets in North America; e.g., eliminate animal and trans fats; choose leaner proteins; limit fat, sugar and sodium and increase fruit and vegetable intake; e.g.,
  - understand and discuss problems and concerns with fad diets as they relate to health concerns
  - understand special concerns with vegetarian diets
- discuss the recommended daily intake (RDI) of vitamins and minerals for the average person and provide examples of food sources of these elements
- demonstrate the ability, using *Canada's Food Guide to Healthy Eating*, to plan daily menus, including breakfast, lunch and dinner, that fulfil the RDI.

Meal Planning

Students will:

- demonstrate an understanding of the factors and customs that control meal/menu planning; e.g.,
  - follow the basic rules when making menus for each item on the menu; e.g., variety of colours/textures, types of meat/vegetables available year-round, methods of cooking, size and shape of the final product
  - use *Canada's Food Guide to Healthy Eating* and RDI guidelines when planning menus; i.e., grain products: 5–12 servings, vegetables and fruits: 5–10 servings, milk products: 2–4 servings, meat and alternatives: 2–3 servings
  - use recognized food standards and considerations while planning menus; e.g., palatability, appearance (colour, arrangement, service order) and flavour (temperature, seasoning, odour and degree of doneness).

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Students will demonstrate the accurate measurement of the ingredients indicated in recipes to produce a variety of food products.

Measurement and the Use of Recipes

Students will:

- demonstrate the correct use of small, hand-held measurement tools when working with recipes and use both imperial (teaspoons, tablespoons, cups) and metric (millilitres, litres) units of measure correctly and safely
- identify all three methods of weighing, portioning and measuring ingredients and demonstrate the ability to use scales to weigh and portion foods
- demonstrate problem-solving skills to convert recipes from imperial to metric and vice versa
- demonstrate problem-solving and mathematics skills by reducing recipes by $\frac{1}{4}$ and $\frac{1}{2}$ or by doubling and tripling.

Students will demonstrate effective cooking techniques to produce a variety of food products.

Cooking Techniques

Students will:

- prepare types of meat, e.g., beef, pork, poultry and fish; e.g.,
  - identify retail cuts of beef, complete a blank beef chart by naming the cuts, discuss the tenderness of each cut
  - demonstrate the ability to discuss connective tissues, elastin and collagen; where they are found in beef and how to break them down through chemical, mechanical and moist heat methods
- demonstrate the ability to produce a range of clear, cream and chowder soups and sauces, such as chicken noodle, cream, mushroom, chowder, clam chowder, bisque, seafood bisque; e.g.,
  - demonstrate the ability to understand and use the terms relating to soups, stocks and sauces
- demonstrate the ability to rehydrate, prepare and cook grains; e.g.,
  - possess an understanding of the various types of rice and how to handle each to prepare quality rice dishes
  - demonstrate the ability to make pasta
- demonstrate the ability to create side, entrée and dessert salads; e.g.,
  - demonstrate the ability to create cold garnishes; e.g., radish roses, celery curls, tomato roses and others
  - produce a variety of complex salads; e.g., chef's salad, caesar salad, jellied salad, vegetable salad and others
  - demonstrate the ability to produce and create fancy sandwiches
- demonstrate an understanding of the types of ingredients used in baking and the general purposes of each; i.e., leaveners, sweeteners, stabilizers, tenderizers, flavourings, thickeners
- produce quality yeast doughs; e.g.,
  - demonstrate the ability, using recipes, to produce several types of yeast bakery products; e.g., baguettes, focaccia loaf, multigrain bread
  - demonstrate the ability to produce a sweet dough and prepare cinnamon buns or doughnuts
  - produce pastry doughs; e.g., puff pastry, Danish pastry, croissant pastry, pie crust, choux pastry and finished-quality baked goods
- demonstrate the ability to plan, cook and serve a breakfast, luncheon and/or dinner.

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Students will demonstrate decision-making skills when purchasing and storing food.

Management Purchasing and Storage

Purchasing

Students will:

- demonstrate an understanding of food grading, labelling and inspection relevant to the purchasing of food products, whether canned or frozen; e.g., Canada standard, choice or fancy; beef grades of A1 to E; poultry graded Canada Grade A or utility
- participate in inventory and the ordering of food and supply products
- demonstrate the ability to choose fresh fruits, vegetables, seafood and meats and maintain their wholesomeness
- demonstrate a working knowledge of food additives, their purposes and their effects on food products; e.g., add nutrients, preserve food, improve colour, enhance flavour, maintain texture, provide leavening, adjust pH levels and prevent caking—and the dangers they pose to our health and well-being.

Storage

Students will:

- apply food storage knowledge to protect food stuffs from spoilage, waste or cross-contamination
- demonstrate an understanding of refrigeration and freezer storage times and temperatures; e.g.,
  - demonstrate the ability to correctly store foods by understanding which types of food to refrigerate, which to correctly freeze and which to place in dry storage
  - show an understanding of how long each type of food can be kept without risk of spoilage or loss of wholesomeness
  - use the six methods of food preservation to retard loss; i.e., low temperature, high temperature, removal of moisture, exclusion of air, adding preservatives and commercial irradiation.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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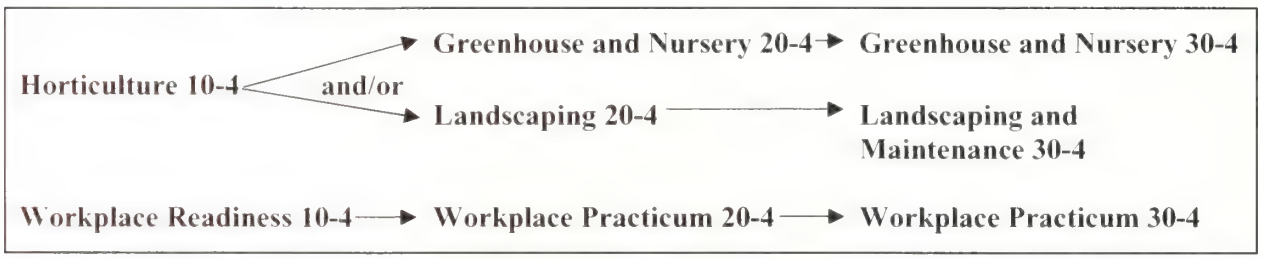
KNOWLEDGE AND EMPLOYABILITY
HORTICULTURE

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Horticulture is the science or art of growing and maintaining fruits, vegetables, flowers and ornamental plants. Horticulture encompasses many different career paths with entry-level opportunities in each horticultural field. Entry-level jobs are usually available in most communities. Some involve full-time work and others involve seasonal outdoor work. For all of these horticultural jobs, students will need to know the basics of growing plants.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Horticulture 10-4 provides a basis for, and an introduction to, Greenhouse and Nursery 20-4 and Landscaping 20-4.
- Greenhouse and Nursery 20-4 and 30-4 focus on planting and caring for a variety of plants.
- Landscaping 20-4 and Landscaping and Maintenance 30-4 focus on the creation and maintenance of a landscape environment.
- Students interested in horticulture should be encouraged to take both courses at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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HORTICULTURE 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a horticulture career environment. • Students will develop safe workplace practices and procedures. • Students will be introduced to technology to develop a high-quality product or service. • Students will familiarize themselves with a variety of plants. • Students will identify the different plant parts and their functions. • Students will develop an understanding of the propagation process. • Students will grow a variety of plants.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.	**Lifelong Learning** *Students will:* • identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation • set learning goals and identify how formal/informal learning can help them achieve goals • develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will develop an ability to manage change effectively.	**Adapting to Change** *Students will:* • identify available support resources and assess potential barriers • prepare an action plan to proactively respond to a particular change or challenge.
Students will explore and discover personal aptitudes and interests related to occupational opportunities.	**Career Development** *Students will:* • create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options • identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site • describe how work contributes to individual goals • explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.	**Building Community** *Students will:* • identify commonly accepted courteous behaviour • assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour • identify the value of volunteering in community activities; e.g., charity work, community car wash.
Students will demonstrate positive effort and behaviour toward achieving a group's goals.	**Teamwork** *Students will:* • identify team goals • work independently and with others to support team goals; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a horticulture career environment.

Career Awareness

Exploration

Students will:

- research different occupational specializations within the horticulture field; e.g.,
  - greenhouses
  - nurseries
  - landscaping
  - garden centres
  - grounds maintenance
  - florist shops
  - market gardening
- identify local opportunities within a career field
- define and recognize entrepreneurship as a potential career path
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary
- inventory personal competencies, interests, goals and work preferences and link this inventory to career options
- investigate the workplace through community partnerships; e.g.,
  - identify employer and employee expectations, rights and responsibilities
  - describe how work contributes to individual goals.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the laboratory area with care and with attention to potential workplace health and safety risks

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- treat other members of the team with respect
- use appropriate language and terminology
- wear appropriate dress.

Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others during horticulture procedures; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions
  - identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize health and safety hazards associated with horticulture procedures
- identify important standards (codes) and governing bodies in the horticulture industry.

Students will be introduced to technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- explore new and emerging products and technological advances used in horticulture.

Tools and Equipment

Students will:

- identify common hand tools used in horticulture-related duties; e.g., shovels, rakes, pruners, dibbers, cultivators
- identify common power equipment used in horticulture-related activities
- identify the proper care, cleaning and maintenance of tools and equipment.

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Materials (growing media)

Students will:

- identify growing media used to support plant growth; e.g.,
  - soil, such as black loam
  - sand
  - peat moss
  - clay
  - perlite
  - vermiculite
- recognize the texture of different soil types
- identify the drainage characteristics of different soil types
- identify soilless mixes and their composition
- explain the advantages of various modifiers.

Providing Service

Students will:

- identify client relationships or interactions within the field of horticulture
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- identify the importance of customer or client service to all businesses/industries
- identify professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will familiarize themselves with a variety of plants.

Plant Identification

Students will:

- identify the characteristics and uses of plant groupings; i.e.,
  - annuals; e.g.,
    - pansy
    - petunia
    - marigold
    - geranium
    - impatiens
  - perennials; e.g.,
    - herbaceous
    - woody (trees, shrubs, evergreens)
  - weeds; e.g.,
    - chickweed
    - dandelion
    - quack grass
    - stinkweed
    - sow thistle

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  - interior plants; e.g.,
    - spider plant
    - ivy
    - fig
- demonstrate manual control of weeds through pulling, hoeing and cultivating
- use catalogues and other publications to categorize a variety of plants.

Students will identify the different plant parts and their functions.

Plant Parts and Their Functions

Students will:

- identify and describe the basic function of each plant part; e.g.,
  - roots
  - stems
  - leaves
  - flowers
  - fruits
  - seeds.

Students will develop an understanding of the propagation process.

Propagation

Students will:

- outline the basic practices of reproducing plants; e.g.,
  - cutting:
    - practise taking cuttings of different plants
    - compare root development of cuttings in various media
  - seeding:
    - interpret planting instructions
    - demonstrate proper seeding techniques
    - maintain the seeds until germination.

Students will grow a variety of plants.

Growing Plants

Students will:

- identify the conditions necessary for plant growth; e.g.,
  - light
  - air
  - water
  - temperature
  - nutrition
  - space
- demonstrate the effects of eliminating one or more conditions required for plant growth
- identify the materials needed for transplanting and potting plants; e.g.,
  - soil
  - containers
  - dibbers
- demonstrate transplanting and potting techniques
- identify appropriate pot sizes.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.	**Listening, Speaking, Reading and Writing** *Students will:* • read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals • identify a purpose for writing • print or write legibly, spell accurately and apply rules of grammar to construct text • listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.	**Problem Solving** *Students will:* • identify and define, and ask relevant questions to clarify, the problem • evaluate the results in terms of expected outcomes.

NUMERACY

Students will understand the value of numeracy skills in the workplace.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context

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- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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GREENHOUSE AND NURSERY 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a greenhouse and nursery career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will identify a variety of plants. • Students will develop an understanding of botany. • Students will develop an understanding of the importance of soils and different media. • Students will develop an understanding of the importance of fertilizer in the growth process. • Students will recognize the procedures for plant growth and the mass production of plant material. • Students will develop an understanding of floral design and arrangements.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work) assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., — generate ideas assess resources contribute abilities and interests monitor progress share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a greenhouse and nursery career environment.	**Career Awareness** **Orientation** *Students will:* • identify entry-level competencies • identify post-secondary opportunities • recognize entrepreneurial opportunities within the industry • introduce themselves to local business/industry operations • match their personal interests to their job search; e.g., – identify sources of support for investigating and finding work – describe entry-level requirements – recognize potential career ladders. **Standards** *Students will:* • develop workplace protocols, procedures and standards of conduct; e.g., – demonstrate appropriate work habits – use safe and sanitary practices – demonstrate pride in themselves – demonstrate pride in their work performance – show respect for others – respect the property of others.
Students will demonstrate safe workplace practices and procedures.	**Workplace Health and Safety** *Students will:* • identify safety device locations and procedures within the workplace environment • identify government regulatory bodies that support a safe workplace • demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)

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- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify hazards within the greenhouse environment; e.g., tools, pesticides, fertilizers, electrical, heating, equipment.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- identify new and emerging products and technological advances used in greenhouses and nurseries.

Tools, Equipment and Materials

Students will:

- identify and safely use common hand and power tools and equipment used in greenhouses and nurseries
- handle and dispose of, properly, environmentally hazardous materials used in greenhouses and nurseries; e.g.,
  - reread Material Safety Data Sheets (MSDS)
  - read publications on the safe handling of toxic substances within the greenhouse
  - read labels on chemical containers to check their uses and hazards.

Providing Service

Students will:

- identify client relationships or interactions within the field of greenhouses and nurseries
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

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Students will identify a variety of plants.

Plant Identification

Students will:

- name and discuss characteristics of plants from each category; e.g.,
  - annuals
  - perennials
  - seasonal flowers
  - house plants
- recognize annuals that are produced from seeds or cuttings.

Students will develop an understanding of botany.

Plant Parts and Functions

Students will:

- identify the parts of a plant and provide a mounted plant specimen, showing:
  - roots
  - stems
  - leaves
  - flowers
  - seeds
  - fruits
- identify the different types of each plant part; i.e.,
  - root: fibrous, rhizome, tap
  - stems: bulbs, corms, tubers
  - leaves: simple, compound, needle
  - flowers: perfect, imperfect
  - seeds: varieties/diversity
  - fruits: varieties/diversity
- explain the function of each plant part
- identify plant processes; i.e.,
  - photosynthesis
  - respiration
  - transpiration
  - tropism.

Students will develop an understanding of the importance of soils and different media.

Growing Media

Types of Natural Soils

Students will:

- identify the characteristics of common soil types; e.g.,
  - drainage
  - water-holding capacity
  - pH
  - salinity (EC)
- analyze soil and identify the amendments required for a specific crop.

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Soilless Media

Students will:

- identify the ingredients required for each type of professional mix; e.g.,
  - seeding
  - propagation
  - basket
  - potting
  - general
  - compost
- test for soil pH; e.g., acidity, alkalinity
- observe the changes in pH of a soil sample using various substances; e.g.,
  - lemon juice
  - sulphur
  - lime
- test the water-holding capacity of various soilless mixes
- determine the use of each type of modifier.

Students will develop an understanding of the importance of fertilizer in the growth process.

Fertilizer

Major Elements

Students will:

- identify the function of the major elements of fertilizer; e.g.,
  - nitrogen (N)
  - phosphorus (P)
  - potassium (K)
- identify the symptoms of various nutrient deficiencies
- identify the differences between fertilizer types; e.g.,
  - soluble
  - granular
  - slow release.

Students will recognize the procedures for plant growth and the mass production of plant material.

Plant Growth/Plant Production

Growth Needs

Students will:

- determine the requirements for specific crops; e.g.,
  - air
  - light
  - water
  - temperature
  - nutrition
- demonstrate the techniques required to pot and transplant plants
- modify the soils provided so each mix will suit a specific plant type

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- identify plant management procedures to ensure plant growth; e.g.,
  - watering
  - fertilizer
  - pruning
  - environmental factors.

Plant Problems

Students will:

- identify symptoms of plant health problems, including:
  - diseases
  - insect pests
  - cultural
  - environmental
- identify procedures for managing plant problems.

Propagation

Students will:

- demonstrate the propagation of plants, using asexual techniques, e.g., cutting, division, layering, and sexual techniques; e.g., seed
- recognize the propagation techniques for commercial plant production.

Students will develop an understanding of floral design and arrangements.

Floral Design

Students will:

- identify tools and materials for making a basic floral arrangement
- demonstrate techniques for making arrangements; e.g.,
  - bud vase
  - rose bowl
- identify various common plant materials used in fresh floral arrangements.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets the expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.	**Listening, Speaking, Reading and Writing** *Students will:* • read, view and interpret occupation-related materials; e.g., – use related occupational terms – identify occupation-related literature – interpret and follow written instructions • select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and: – describe uses of writing skills in related occupations – write a letter of inquiry – write a letter of thanks – complete job applications • listen and present information in a clear, concise manner; e.g., – listen attentively to organize and classify information and ideas – organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.	**Problem Solving, Decision Making and Creative Thinking** *Students will:* • apply a problem-solving model to identify the problem/issue • identify appropriate actions and develop several alternatives for each promising idea • evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals • estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area • use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.	**Computer Operations and Computer Applications** *Students will:* • demonstrate appropriate language and etiquette when using information technology • demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls • demonstrate basic computer operations to complete a task; e.g., – use basic keyboarding skills – store, organize and retrieve information correctly – locate and select information and ideas using appropriate technology and information systems; e.g., Internet – access, send and retrieve e-mail and attachments • demonstrate procedures for connecting and using audio, video and digital equipment • demonstrate procedures for sending and receiving faxes and setting up a fax machine • demonstrate procedures for copying and printing documents.

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GREENHOUSE AND NURSERY 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a greenhouse and nursery career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate the effective use of soils and modifiers to grow specific plants. • Students will demonstrate various propagation procedures to propagate different plants grown in the nursery and greenhouse. • Students will demonstrate procedures for plant growth and the mass production of plant materials. • Students will demonstrate an understanding of floral design.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a greenhouse and nursery career environment.	**Career Awareness** **Preparation** *Students will:* • assess entry-level competencies • recognize opportunities for further education/training • select post-secondary opportunities • identify local entrepreneurs • establish contacts with local businesses/industries • explore career opportunities in garden centres and nurseries; e.g., – visit local garden centres or nurseries – interview employees – discuss employment with the manager • present marketable skills and strengths; e.g., – write a letter of application – prepare a résumé – complete application forms – identify contacts and references – collect evidence of competencies in a portfolio • demonstrate an informed decision-making process; e.g., – collect evidence supporting their career choice – integrate evidence to support an informed selection of a career pathway – present a collection of artifacts and reflections to support an informed selection of a career pathway. **Standards** *Students will:* • demonstrate workplace protocols, procedures and standards of conduct; e.g., – demonstrate appropriate work habits – demonstrate effective human relations techniques in the workplace – practise safety in the workplace

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- demonstrate acceptable verbal and nonverbal communication skills
- practise personal and public hygiene procedures
- demonstrate entry-level competency in tools and equipment usage
- use supplies correctly
- follow good storage practices
- demonstrate pride in their work performance
- demonstrate a willingness to work
- demonstrate respect for others
- follow accepted principles and procedures
- recognize opportunities for further education/training.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify safety hazards in the garden centre and nursery; e.g.,
  - identify and list hazards that may affect the public.

Students will use technology to develop a high-quality product or service.

Products and Services

Technology Integration

Students will:

- use new and emerging products and technological advances needed in greenhouses and nurseries; e.g.,
  - examine the effects of current technological advances in the greenhouse and nursery industry and explain the impact of current technology on the job descriptions of future greenhouse and nursery trade workers.

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Providing Service

Students will:

- identify client relationships or interactions within the field of greenhouses and nurseries
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations.

Students will demonstrate the effective use of soils and modifiers to grow specific plants.

Soils and Modifiers

Students will:

- determine the ideal soilless mix for:
  - annuals
  - perennials
  - flowering plants
  - baskets
  - vegetables
  - trees and shrubs.

Students will demonstrate various propagation procedures to propagate different plants grown in the nursery and greenhouse.

Plant Propagation

Students will:

- use softwood cuttings; e.g., propagate quantities of annuals, perennials, woody plants and foliage plants
- use hardwood cuttings; e.g., propagate dormant woody stems
- divide and transplant perennials and divide bulbs and rhizomes
- graft softwood plants and graft and bud hardwood plants.

Students will demonstrate procedures for plant growth and the mass production of plant materials.

Plant Growth/Plant

Production

Students will:

- demonstrate procedures for growing plants to maturity; e.g.,
  - annuals
  - perennials
  - seasonal flowering plants
  - trees and shrubs
- outline the stages of production for each category
- identify cost factors and the sale price in each category
- determine the size and type of containers to be used
- transplant seedlings or plugs

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- water and fertilize the plants to obtain maximum growth
- prune or cut back the plant as required
- present plants for sale when they are mature
- schedule plant crops for seasonal sale; e.g., poinsettias, Easter lilies
- record and schedule maintenance procedures
- estimate quantities, areas and volumes required for crop production; e.g.,
  - fertilizer
  - soil mixtures.

Students will demonstrate an understanding of floral design.

Floral Design

Students will:

- demonstrate the correct techniques for the incorporation of design elements; e.g.,
  - proportion
  - colours
  - scale
  - balance
- design and make arrangements to sell
- demonstrate procedures for making corsages and boutonnieres
- demonstrate procedures for the care of perishable floral materials.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instruction
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.	**Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability** *Students will:* • apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems • use calculators or computers, to perform calculations involving large and small numbers, when solving problems • apply concepts of rate, ratio, percentage and proportion • demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals • estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area • use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.	**Computer Operations and Computer Applications** *Students will:* • model and assume personal responsibility for the ethical use of information technologies • demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls • use computer operations to assist in the completion of daily workplace operations; e.g., – use basic keyboarding skills – store, organize and retrieve information correctly – locate and select information and ideas using appropriate technology and information systems; e.g., Internet – access, send and retrieve e-mail and attachments • demonstrate procedures for connecting and using audio, video and digital equipment • demonstrate procedures for sending and receiving faxes and setting up a fax machine • demonstrate procedures for copying and printing documents.

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LANDSCAPING 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a landscaping career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop an increased awareness of technology to develop a high-quality product or service. • Students will identify and use field soils in a landscaping environment. • Students will identify plant material used in landscaping. • Students will develop an understanding of the principles of landscape design. • Students will demonstrate effective construction of an exterior landscape. • Students will identify various landscaping products and their roles in landscape development. • Students will identify processes and techniques for creating an interior landscape.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a landscaping career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate basic safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- identify hazards related to landscaping work; e.g.,
  - use of power equipment and tools
  - lifting
  - repetitive jobs
  - pest control products.

Students will develop an increased awareness of technology to develop a high-quality product or service.

Products and Service

Tools and Equipment

Students will:

- use, safely, hand and power tools and equipment commonly used in landscaping services
- handle and dispose of, properly, environmentally hazardous materials used in landscaping.

Technology Integration

Students will:

- identify new and emerging products and technological advances used in landscaping.

Providing Service

Students will:

- identify client relationships or interactions within the field of landscaping
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations
- estimate quantities, areas and volumes; e.g., of sod and soil
- identify the costs of landscaping products and services
- estimate all costs involved in a landscaping project; e.g.,
  - plant material
  - soil
  - hard landscape materials
  - labour.

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Students will identify and use field soils in a landscaping environment.

Field Soils

Students will:

- identify and use the types of field soils needed in exterior landscaping; e.g.,
  - black loam
  - clay
  - sand
- identify and use the modifiers needed to make a satisfactory growing medium; e.g.,
  - peat moss
  - sharp sand
- demonstrate proper soil mixes for:
  - trees and shrubs
  - perennials
  - sod.

Students will identify plant material used in landscaping.

Landscaping Plants

Students will:

- identify the characteristics of plants, such as shapes, sizes, needs, optimum location, hardiness, used in landscaping projects; e.g.,
  - deciduous trees/shrubs
  - evergreens
  - perennials.

Students will develop an understanding of the principles of landscape design.

Landscape Design

Students will:

- design a simple residential landscape plan
- sketch landscape designs
- explore landscape design software
- present a planting plan, including:
  - foundation plantings
  - perennial borders
  - mixed beds
- identify xeriscaping and incorporate its principles into a landscape plan
- identify the environmental benefits of landscaping; e.g.,
  - air quality
  - erosion control
  - temperature and wind control.

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Students will demonstrate effective construction of an exterior landscape.

Exterior Landscape Planting

Students will:

- follow a given landscape plan
- identify and demonstrate techniques for planting trees and shrubs and laying sod for a landscaping project; e.g.,
  - prepare the hole
  - prepare the modified soil
  - place the plant material in the hole with a base of good soil
  - dig the hole to proper depth and diameter, in relation to the plant material
  - fill, properly, around the plant with new soil
  - firm down the new soil
- identify procedures for the staking of trees.

Students will identify various landscaping products and their roles in landscape development.

Landscape Construction

Students will:

- identify the varieties of hard landscaping in a residential yard; e.g.,
  - decks
  - fencing
  - landscaping stone; e.g., interlocking bricks, retaining walls, planters
- identify the functional purpose of different types of hard landscaping
- incorporate hard landscaping into a landscape plan.

Students will identify processes and techniques for creating an interior landscape.

Interior Landscaping

Students will:

- identify interior plants that can be grown or used for decoration within the home, office or public buildings
- identify the different conditions that exist in the interior environment; e.g., light and temperature
- analyze light intensity from different sources at different times; e.g.,
  - direct sunlight from north, south, east and west windows
  - artificial light from high-intensity or fluorescent lights
- identify procedures for transplanting interior plants
- identify plant problems within an interior space
- plan and design an interior landscape.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:

- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:

- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:

- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:

- identify expected standards for a product or service
- ensure a product or service meets the expected standards and timelines.

Evaluation

Students will:

- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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LANDSCAPING AND MAINTENANCE 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a landscaping and maintenance career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will use technology to develop a high-quality product or service. • Students will demonstrate the appropriate skills necessary to maintain plants within a home or office building environment. • Students will demonstrate the skills needed to effectively maintain an exterior landscape.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige
- build personal career paths and networks
- analyze how work contributes to societal and economic needs and a sense of responsibility
- prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

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PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.

Self-development

Students will:

- continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals
- demonstrate entry-level self-presentation appropriate to the activity and role
- maintain a high standard of personal ethics when interacting with others.

Students will manage risks to achieve both personal and workplace goals.

Risk Management

Students will:

- maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace
- monitor success in reducing the impact of hazards on themselves and others
- demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace
- work with others to respond to emergencies
- take planned risks to contribute to personal growth.

WORKING WITH OTHERS

Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

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Students will demonstrate the ability to complete tasks in a team environment.	**Teamwork** *Students will:* • assess the effectiveness of group and personal contributions; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a landscaping and maintenance career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- explore career opportunities in landscaping maintenance; e.g.,
  - home
  - commercial
  - golf course
  - parks and recreational
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio
- demonstrate an informed decision-making process; e.g.,
  - collect evidence supporting their career choice
  - integrate evidence to support an informed selection of a career pathway
  - present a collection of artifacts and reflections to support an informed selection of a career pathway
  - use essential skill assessment devices to construct a personal learning exit plan.

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Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

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Students will use technology to develop a high-quality product or service.

Products and Service

Technology Integration

Students will:

- use new and emerging products and technological advances needed in landscaping and maintenance; e.g.,
  - examine the effects of current technological advances in the landscaping and maintenance industry and explain the impact of current technology on the job descriptions of future landscaping and maintenance trade workers.

Providing Service

Students will:

- identify client relationships or interactions within the field of landscaping and maintenance
- identify services needed, required or provided
- collect necessary information to complete a purchase or fill out a work order
- recognize the importance of customer or client service to all businesses/industries
- demonstrate professional practices and work habits
- strive to meet and exceed the client's expectations
- estimate quantities, areas and volumes; e.g., of sod and soil
- identify the costs of landscaping products and services
- estimate all costs involved in a landscaping project; e.g.,
  - plant material
  - soil
  - hard landscape materials
  - labour
- prepare invoices for services provided, including materials.

Students will demonstrate the appropriate skills necessary to maintain plants within a home or office building environment.

Interior Plant Maintenance

Watering

Students will:

- recognize and demonstrate the proper techniques for watering interior plants
- determine the factors affecting a maintenance schedule; e.g.,
  - location
  - size of plant and container
  - soil type
  - plant type.

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Fertilizing

Students will:

- recognize the three main elements listed on a fertilizer container; i.e.,
  - nitrogen (N)
  - phosphorus (P)
  - potassium (K)
- determine analysis of fertilizer to use in interior environments
- schedule fertilizer application.

Potting

Students will:

- demonstrate potting techniques for interior plants
- identify soil types and requirements
- demonstrate the installation of a plant in a decorative container, including the:
  - selection of the container
  - drainage space
  - installation of the plant
  - application of decorative mulch
- identify and demonstrate the protection of surroundings and effective clean-up procedures.

Pruning

Students will:

- explain the pruning process
- select appropriate tools for pruning
- identify when pruning is most effective
- demonstrate the effective pruning of different plants; e.g., deciduous trees, deciduous shrubs and evergreens.

Insect Control

Students will:

- identify common insect pests found on office and house plants; e.g.,
  - aphids
  - mealy bugs
  - scale
  - whitefly
  - western flower thrips
- describe plant symptoms that indicate an infestation of pests
- identify and demonstrate, where possible, the safe and effective control of pests
- identify biological controls and their effects.

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Students will demonstrate the skills needed to effectively maintain an exterior landscape.

Exterior Landscape Maintenance

Trees and Shrubs

Students will:

- identify and demonstrate various techniques for growing healthy plant material in a landscape, considering:
  - watering
  - fertilizing
  - pruning
  - insect pests.

Lawns

Students will:

- identify the requirements for effective lawn care; e.g.,
  - tools and equipment
  - watering
  - fertilizing
  - cutting
  - power raking
  - aerating
  - disease control
- demonstrate effective lawn care
- identify and demonstrate weed control; e.g.,
  - types of weeds
  - chemical controls
  - cultural controls.

Perennial and Annual Borders

Students will:

- demonstrate proper maintenance for plant borders, considering:
  - watering
  - fertilizing
  - dividing
- identify and demonstrate spring and/or fall clean-up procedures; e.g.,
  - general clean-up
  - soil modification
  - mulching.

Water Conservation

Students will:

- identify water conservation techniques; e.g.,
  - mulching
  - water collection, in containers such as rain barrels
  - xeriscaping.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- ensure a product or service meets expected standards and timelines.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
    store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
    access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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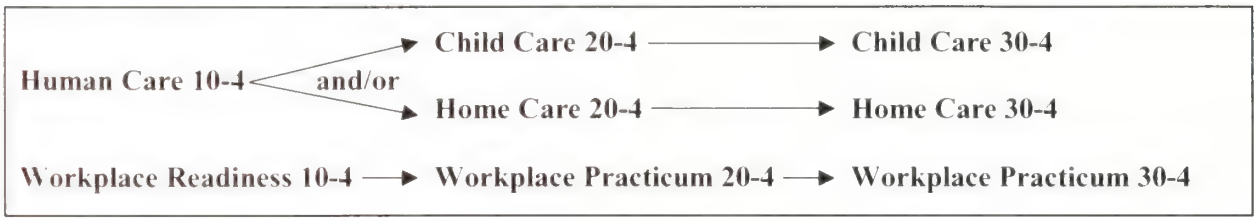
KNOWLEDGE AND EMPLOYABILITY
HUMAN CARE

COURSE SEQUENCE



Knowledge and Employability 10-level courses provide opportunities for *exploration* of, and *orientation* toward, an occupational grouping in a single career field. In 20-level courses, students progress from *orientation* toward *preparation*; and in 30-level courses, students are involved in *preparation* for direct job entry.

Human Care courses are designed to teach occupational knowledge and skills for entry-level positions in child care and home care by developing employability competencies that relate to all career paths.

- All courses focus on developing career awareness, safety standards and knowledge of tools, equipment and materials related to the industry.
- Human Care 10-4 provides a basis for, and an introduction to, Child Care 20-4 and Home Care 20-4.
- Child Care 20-4 and 30-4 focus on the care and development of children.
- Home Care 20-4 and 30-4 focus on providing care services to the elderly.
- Students interested in human care should be encouraged to take both courses at the 20 and 30 levels.
- A related Workplace Practicum or Work Experience course is recommended to further enhance employability and occupational skills and to adequately prepare students for entry into the work force. In senior high school, a 30-level Workplace Practicum course, 30-level Work Experience course or 30-level Green Certificate course is required to fulfill the requirements of a Certificate of High School Achievement. Workplace practicums are supportive work placements in a related field that will allow students to validate their learning in the workplace.

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COURSE DELIVERY

This Knowledge and Employability occupational strand includes two sequences of 5-credit courses. Students progress through the courses in a sequence and may combine courses across sequences to increase the depth of their knowledge.

The 10-level course is a prerequisite for both of the 20-level courses within the strand. The 20-level course in each sequence is a prerequisite for the 30-level course in that sequence.

The occupational courses may be offered in a variety of learning environments that range from a classroom in a school to a business/industry work site. The courses offer a balance between school-based and work-based learning that provides options for students to enter the workplace or to pursue post-secondary education or training.

GOALS

Students in Knowledge and Employability occupational courses will:

- identify standards determined by the workplace for the academic and occupational competencies considered necessary for success
- demonstrate practical applications through on- and off-campus experiences/community partnerships
- experience career development to assist them in exploring careers, assessing their career skills and developing a career-focused portfolio
- develop interpersonal skills to ensure respect, support and cooperation with others
- develop safety awareness and habits to ensure a safe working environment.

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COMPETENCIES FRAMEWORK

Each Knowledge and Employability occupational course is made up of three elements: employability, occupational and academic competencies. The combination of these three elements is essential to the delivery of the occupational courses.

- Employability competencies are transferable to all occupations and are consistent throughout all courses.
- Occupational competencies are specific to an occupational area and provide the context through which students will develop their employability competencies.
- Academic competencies are to be reinforced and further developed through the occupational context that provides relevance to the academic courses.

The integration of the three elements is essential to equip students to make the transition from school to the workplace.

KNOWLEDGE AND EMPLOYABILITY OCCUPATIONAL COURSES COMPETENCIES FRAMEWORK

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HUMAN CARE 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will explore a variety of occupations within a human care career environment. • Students will develop safe workplace practices and procedures. • Students will demonstrate a basic ability to provide first aid and improve their personal safety awareness. • Students will provide a safe and caring child care environment. • Students will identify home care as a component of human care.
Ensuring Quality	• Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will enhance their ability to listen, speak, read and write effectively.
Thinking	• Students will develop problem-solving strategies.
Numeracy	• Students will understand the value of numeracy skills in the workplace.
Information Technology	• Students will familiarize themselves with the information technology used in daily workplace operation.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.	**Lifelong Learning** *Students will:* • identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation • set learning goals and identify how formal/informal learning can help them achieve goals • develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will develop an ability to manage change effectively.	**Adapting to Change** *Students will:* • identify available support resources and assess potential barriers • prepare an action plan to proactively respond to a particular change or challenge.
Students will explore and discover personal aptitudes and interests related to occupational opportunities.	**Career Development** *Students will:* • create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options • identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site • describe how work contributes to individual goals • explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.	**Building Community** *Students will:* • identify commonly accepted courteous behaviour • assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour • identify the value of volunteering in community activities; e.g., charity work, community car wash.
Students will demonstrate positive effort and behaviour toward achieving a group's goals.	**Teamwork** *Students will:* • identify team goals • work independently and with others to support team goals; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will explore a variety of occupations within a human care career environment.

Career Awareness

Exploration

Students will:

- identify a variety of occupations within the fields of child care, home care and institutional care; e.g.,
  - family day home provider
  - day-care worker
  - nanny
  - early childhood educator
  - after-school program provider
  - elder care worker
  - rehabilitation aide
  - handibus driver
  - live-in caregiver
  - teacher's aide
  - youth worker
  - hospital porter
- define and recognize entrepreneurship as a potential career path
- identify local facilities and employment opportunities that offer services for children, people with special needs and the elderly
- research employment information; e.g., duties, working conditions, personal characteristics, education, salary
- identify occupations that require first aid certification.

Standards

Students will:

- identify workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area, return tools to designated areas, minimize the waste of materials
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and laboratory activities
  - treat the work area with care and with attention to potential workplace health and safety risks
  - treat other members of the team with respect
  - use appropriate language and terminology
  - wear appropriate dress.

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Students will develop safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and demonstrate preventive measures to avoid accidents and injury to themselves and others; e.g.,
  - identify safety device locations in the laboratory or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - demonstrate the correct procedures for addressing injuries
  - identify the proper use of tools with regard to other classmates and laboratory conditions
  - identify personal protective equipment (PPE); e.g., proper eyewear, proper footwear
  - demonstrate proper body position while at a work station
  - maintain a safe and clean work area
  - identify and practise the safe use of electrical equipment
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements
- recognize health and safety hazards associated with human care procedures
- identify important standards (codes) and governing bodies in the human care industry.

Students will demonstrate a basic ability to provide first aid and improve their personal safety awareness.

First Aid and Personal Safety

Students will:

- identify the roles and responsibilities of a first-aid provider
- outline the procedures to follow while waiting for medical help
- explain the procedure for administering cardiopulmonary resuscitation (CPR)
- demonstrate the knowledge and skills required for basic first aid in simulated emergency situations
- demonstrate the principles of emergency scene management; e.g., scene survey, primary and secondary surveys, ongoing casualty care
- demonstrate the proper procedures for administering infant CPR
- plan and evaluate first-aid procedures and first-aid kits effectively
- participate, and obtain certification, in first-aid courses; e.g., St. John's Ambulance, Red Cross.

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Students will provide a safe and caring child care environment.

Child Care

Students will:

- investigate child care as a business; e.g.,
  - job-search procedures
  - reference checks
  - levels of expertise
  - location
  - transportation
  - salary
  - criminal record checks
- explain how to create safe indoor and outdoor environments; e.g., childproofing the home and formulating a family escape plan
- identify strategies for emergencies; e.g., fever, vomiting, evidence of pain
- identify the rights and responsibilities of the caregiver, the child and the child's family
- list the basic personal attributes required when working with children; e.g., calmness, kindness, consistency, patience, listening, establishing eye contact, understanding the importance of play
- identify common child care problems and suggest solutions
- identify safe and age-appropriate toys and activities for infants and toddlers
- explain why a caring environment and following an established routine are important
- recognize the importance of observing and recording behaviour
- identify, and recognize the importance of, hygienic practices for children
- demonstrate the basic skills required when caring for infants; e.g.,
  - changing
  - feeding
- describe the procedures for accident prevention and the management of emergency or unusual circumstances
- identify the necessary telephone numbers or contacts that an infant caregiver should know
- plan and prepare age-appropriate meals, considering:
  - nutrition
  - formula
  - portions
- select clothing for children that is appropriate for activities and weather conditions.

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Students will identify home care as a component of human care.

Home Care

Students will:

- identify various occupations within the field of human care; e.g.,
  - continuing care
  - active treatment
  - rehabilitation
  - community health
- identify the rights and responsibilities of the home caregiver, the family and the employer; e.g.,
  - to encourage patient independence
  - to assist the patient in meeting their basic needs
  - basic housekeeping tasks
- identify the ethical and legal responsibilities of the caregiver
- identify the proper aseptic techniques to use in the maintenance of personal hygiene and the cleaning and maintenance of supplies and equipment
- identify the proper use and disposal of barrier devices; e.g., gloves, masks, bandages, dressings
- identify the correct techniques for administering personal care; e.g., lifting and transferring, changing body position, use of mechanical aids
- identify the need for a fire escape plan for bedridden and/or wheelchair-bound patients
- identify the correct techniques for:
  - taking and recording vital signs
  - treating sprains, strains and dislocations
  - applying and changing bandages and dressings
- list the basic activities required for daily-living assistance; e.g.,
  - oral care
  - hair care
  - skin care
  - dressing
  - toileting
  - exercise
  - bathing and feeding
- understand the importance of patient confidentiality
- demonstrate patience and empathy for a patient's negative emotions; e.g., sadness, anger, frustration, depression, grief.

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Students will develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will enhance their ability to listen, speak, read and write effectively.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret information presented in a variety of forms, including text, videos, graphs, charts, diagrams, manuals
- identify a purpose for writing
- print or write legibly, spell accurately and apply rules of grammar to construct text
- listen and ask questions to expand information and to appreciate the points of view of others.

THINKING

Students will develop problem-solving strategies.

Problem Solving

Students will:

- identify and define, and ask relevant questions to clarify, the problem
- evaluate the results in terms of expected outcomes.

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NUMERACY

Students will understand the value of numeracy skills in the workplace.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will familiarize themselves with the information technology used in daily workplace operation.

Computer Operations

Students will:

- identify the most appropriate technology tool for the task; e.g., fax, e-mail, networks, telephone
- identify appropriate telephone operations, answer telephone calls appropriately, locate numbers and make telephone calls
- identify basic computer operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- identify procedures for connecting and using audio, video and digital equipment
- identify procedures for sending and receiving faxes and setting up a fax machine
- identify procedures for copying and printing documents.

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CHILD CARE 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a child care career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop the knowledge and skills needed to provide care for toddlers. • Students will identify and demonstrate the competencies needed to work in a child care facility. • Students will develop an understanding of the importance of cleanliness and sanitization in a child's environment. • Students will identify their rights and the rights of others within a child care environment.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a child care career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- identify local child care services and introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will develop the knowledge and skills needed to provide care for toddlers.

Toddlers

Introduction

Students will:

- list the rights and responsibilities of babysitters/caregivers, their families and the employer
- investigate child care as a business; e.g.,
  - job-search procedures
  - reference checks
  - qualifications
  - job locations
  - transportation
  - salary
  - criminal record checks
- identify a variety of child care services and environments
- identify the personal characteristics needed to be successful in the field of child care; e.g.,
  - demonstrate well-developed communication and observation skills necessary for successful toddler care
  - demonstrate a genuine interest in children
  - demonstrate patience with, and an understanding of, small children
  - possess the ability to work independently
  - demonstrate initiative and confidence.

Safety

Students will:

- list and identify safety precautions, practices and standards
- identify and use emergency numbers for fire, police and ambulance
- outline strategies for providing a clean, safe environment to prevent illness and injury.

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Care

Students will:

- identify the physical, mental and social development stages of toddlers
- describe the needs of children in relation to their developmental behaviours; e.g.,
  - describe the importance of love and security in promoting a healthy development
  - understand the need for routines and boundaries and assess various useful strategies
- create age-appropriate meals for toddlers, following *Canada's Food Guide to Healthy Eating*
- identify the type and amount of clothing required by a small child, including environment-appropriate items and PPEs; e.g., select clothing that is appropriate for weather conditions and activities
- describe how children learn through play and be knowledgeable of toys and activities that will help children develop physically, mentally and socially; e.g., create an age-appropriate toy or activity that is safe and interesting
- be introduced to positive methods for the guiding of behaviour
- demonstrate the basic skills of toddler care, including feeding, changing, toileting, playing, putting to bed and disciplining/guiding behaviour
- describe and/or demonstrate procedures for accident prevention and handling emergencies or unusual circumstances
- keep an updated contact list of telephone numbers.

Students will identify and demonstrate the competencies needed to work in a child care facility.

Working in Child Care

Introduction

Students will:

- identify various occupations within the child care profession; e.g., day-care workers, private day home providers, nannies, preschool assistants
- investigate careers in child care, noting factors such as types of jobs, location, expertise required and salary.

Safety

Students will:

- identify the factors to consider when providing a safe environment for physical growth and development
- explain safety precautions and regulations for day cares, day homes and schools
- identify strategies for emergency situations and formulate an effective plan of action.

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Responsibilities

Students will:

- identify the roles and responsibilities of a child care worker
- record a child's behaviour objectively and make thoughtful inferences
- describe the stages of physical development and distinguish between fine motor skills
- identify the factors that influence growth and development; e.g.,
  - heredity
  - environment
  - opportunity
  - stimulation
  - nutrition
  - illness and special needs
  - gender differences
  - other; e.g., climate
- identify guidelines for providing an emotionally safe and secure environment that encourages positive development; e.g.,
  - identify and assess appropriate actions for dealing with the strong emotions of children
  - describe and create activities that promote physical growth and development
  - describe a safe environment for the healthy growth and development of toddlers
- plan and implement activities that promote language development; e.g., singing songs, reading books, playing word games
- plan and implement activities that promote sharing, play and manners.

Students will develop an understanding of the importance of cleanliness and sanitization in a child's environment.

Cleaning and Sanitization

Standards

Students will:

- investigate the health and safety standards and procedures required for successful child care facilities
- investigate careers in the cleaning professions; e.g., domestic housekeeper, room/housekeeping attendant, hospital and nursing home cleaners.

Safety

Students will:

- describe the importance of maintaining a clean and sanitary environment to ensure the safety and well-being of small children
- identify the factors to consider when providing a clean and sanitary environment for small children
- explain cleaning and sanitization regulations for day homes, day cares and schools
- identify strategies for dealing with cleaning chemicals and solutions; e.g., proper handling and storage, disposal and safety precautions.

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Application

Students will:

- identify the safety measures necessary for maintaining a safe environment; e.g., clear traffic areas, rugs secured to the floor, few electrical hazards and the use of safety bars
- describe how the spread of disease is controlled in the home in kitchens and bathrooms and when doing laundry, dusting and handling food; e.g.,
  - demonstrate and explain the importance of proper hand-washing techniques
  - demonstrate the proper storage and preparation of hot and cold foods
- demonstrate basic cleaning and sanitation skills; e.g.,
  - explain the procedures for disinfecting diaper change areas
  - discuss how to handle soiled items properly; e.g., toys, soiled clothing
  - demonstrate the proper cleaning techniques for each area of a child's living space; e.g., cribs, high chairs, potties, playpens
- plan and implement a cleaning schedule; e.g., daily, weekly and monthly cleaning tasks.

Students will identify their rights and the rights of others within a child care environment.

Rights

Students will:

- explain the importance and roles of the child care provider in ensuring child safety, as outlined by various agencies; e.g.,
  - investigate various child welfare agencies, noting such factors as the *Child Welfare Act*, child abuse and neglect, the rights of children and the responsibilities of caregivers
- explain the regulations for reporting suspected child abuse or neglect; e.g.,
  - explain how the common physical and behavioural indicators of child abuse and neglect are detected and reported
- differentiate between child abuse and neglect and know how to handle each situation
- locate community supports for children and their families; e.g.,
  - develop a telephone directory of necessary telephone numbers and contacts of various child welfare agencies
- understand a child's right to receive proper nurturing.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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CHILD CARE 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a child care career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will demonstrate the knowledge and skills needed to play with, care for and manage school-aged children. • Students will develop appropriate play activities for children. • Students will identify the requirements for operating or working in a day home. • Students will identify and demonstrate the proper hygiene and sanitation requirements for a day home.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige
- build personal career paths and networks
- analyze how work contributes to societal and economic needs and a sense of responsibility
- prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.

Self-development

Students will:

- continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals
- demonstrate entry-level self-presentation appropriate to the activity and role
- maintain a high standard of personal ethics when interacting with others.

Students will manage risks to achieve both personal and workplace goals.

Risk Management

Students will:

- maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace
- monitor success in reducing the impact of hazards on themselves and others
- demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace
- work with others to respond to emergencies
- take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a child care career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will demonstrate the knowledge and skills needed to play with, care for and manage school-aged children.

School-aged Children

Introduction

Students will:

- list the rights and responsibilities of babysitters/caregivers, their families and the employer
- list and identify safety precautions, practices and standards
- identify and use emergency numbers for fire, police and ambulance
- outline strategies for providing a clean, safe environment to prevent illness and injury
- identify practices related to child safety and illness/injury prevention.

Care

Students will:

- identify the physical, intellectual and social development stages of school-aged children
- describe the needs of children in relation to their developmental behaviours; e.g.,
  - describe the importance of love and security in promoting healthy development
  - understand the need for routines and boundaries and assess various useful strategies
- create age-appropriate meals for school-aged children, following *Canada's Food Guide to Healthy Eating*

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- identify the type and amount of clothing required by children, including cost effectiveness and environment-appropriate items
- develop acceptable and effective methods of discipline for school-aged children
- describe the procedures for planning outings and camps appropriate for school-aged children
- describe how child care staff and families can work together in the best interest of the child.

Responsibilities

Students will:

- describe and/or demonstrate the procedures for accident prevention and handling emergencies or unusual circumstances
- describe how appropriate supervision can prevent accidents
- identify and describe the procedures for dealing with child abuse or neglect; e.g.,
  - indicators of possible abuse or neglect
  - suggestions for responding to indicators of child abuse or neglect
  - strategies caregivers can use to prevent child abuse or neglect
- describe how day-care regulations ensure the safety and well-being of children and staff
- complete proper forms and reports; e.g.,
  - observational notes
  - anecdotal reports
  - intake forms
  - accident forms.

Students will develop appropriate play activities for children.

Behaviour, Play and Activities

Safety

Students will:

- identify the factors to consider when providing a safe environment for physical growth and development
- explain safety precautions and regulations for day cares, day homes and schools
- identify strategies for emergency situations and formulate an effective plan of action
- demonstrate common sense when handling an emergency.

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Activities

Students will:

- describe how creativity relates to child development; e.g.,
  - identify the stages of creative expression children experience
  - demonstrate ways to enhance creativity
- describe the importance of play in the development of children; e.g.,
  - describe play activities that would help develop a child's physical, social, intellectual and emotional development
  - select age-appropriate toys and activities that are safe and interesting
  - develop educational crafts and activities that are safe and interesting
  - provide opportunities for self-directed play
- describe how physical routines and the guiding of behaviour can enhance child development and self-esteem
- demonstrate smooth and effective transitions between the various routines of the day.

Students will identify the requirements for operating or working in a day home.

Day Home Operation

Business

Students will:

- summarize the key business considerations of particular concern to owners of day homes
- prepare a marketing plan for a child care home business
- locate available resources for tax preparation
- create a professional development plan
- list the steps for acquiring accreditation.

Safety

Students will:

- identify the factors to consider when providing a safe environment for physical growth and development
- explain safety precautions and regulations for day home facilities
- identify strategies for emergency situations and formulate an effective plan of action
- explain how to obtain liability insurance for a home-based business.

Day Home Care

Students will:

- prepare a parent handbook that includes the policies and procedures of a day home
- prepare a contract for parents that includes the hours and days of operation, fees, meals, field trips and other transportation, emergency information and contacts, termination procedures, illness policy, discipline policy and parent signatures

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- describe and/or demonstrate the procedures for accident prevention and the management of emergency or unusual circumstances; e.g.,
  - keep an updated contact list of telephone numbers
  - describe how appropriate supervision can prevent accidents
- identify and describe types of child abuse or neglect; e.g.,
  - indicators of possible abuse or neglect
  - suggestions for responding to child abuse or neglect
  - strategies caregivers can use to prevent child abuse or neglect
- describe shaken baby syndrome
- describe how day-care regulations ensure the safety and well-being of children and staff
- describe the responsibility of the child care worker in reporting suspected child abuse or neglect
- demonstrate the basic skills required when providing child care; e.g.,
  - solve behaviour problems
  - develop a routine
  - provide play activities
  - plan and prepare age-appropriate meals for the day and week
  - select clothing that is appropriate for weather conditions and activities
  - provide age-appropriate toys and activities that are safe and interesting.

Inspection

Students will:

- list and describe licencing requirements for a day home
- differentiate between a licenced and a registered day home
- list and prepare documents used in a day home that are required by law
- discuss personnel issues, staff training, supervision, access and ratios and health records and understand their implication for a day home operator
- conduct a self-inspection using a home day-care inspection list.

Students will identify and demonstrate the proper hygiene and sanitation requirements for a day home.

Hygiene and Sanitation

Standards

Students will:

- examine the hygiene and sanitation regulations required by law in a day home; e.g.,
  - identify factors to consider when providing a clean and sanitary environment for small children
  - explain cleaning and sanitization regulations for day homes, day cares and schools
- identify strategies for dealing with cleaning chemicals and solutions; e.g., proper handling and storage, disposal and safety precautions.

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Sanitary Practice

Students will:

- explain the difference between hygiene and sanitation
- describe the importance of maintaining a clean and sanitary environment to ensure the safety and well-being of small children
- describe how the spread of disease is controlled in the home in kitchens and bathrooms and when doing laundry and handling food; e.g.,
  - demonstrate and explain the importance of proper hand-washing techniques
  - demonstrate the proper storage and preparation of hot and cold foods
- demonstrate basic cleaning and sanitation skills; e.g.,
  - explain the procedures for disinfecting diaper change areas
  - demonstrate the proper use of a diaper-changing table
  - discuss the use of individualized towels and washcloths
  - discuss how to handle soiled items properly; e.g., toys, soiled clothing
  - demonstrate the proper cleaning techniques for each area of a child's living space; e.g., cribs, high chairs, potties, playpens
- identify the safety measures necessary for maintaining a safe environment; e.g., clear traffic areas, rugs secured to the floor, few electrical hazards and the use of safety bars
- plan and implement a cleaning schedule; e.g., daily, weekly and monthly cleaning tasks.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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HOME CARE 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will orient themselves toward an occupation within a human care career environment. • Students will demonstrate safe workplace practices and procedures. • Students will develop positive relationships through the communication and observation skills necessary for successful care giving. • Students will identify and provide various forms of assistance to aid a client. • Students will identify and demonstrate safe procedures for providing home care. • Students will identify various equipment used to help individuals maintain independence.
Ensuring Quality	• Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills.
Thinking	• Students will apply creative thinking skills to solve problems.
Numeracy	• Students will apply mathematical concepts to solve occupational problems.
Information Technology	• Students will enhance their performance by using information technology to help complete tasks.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.	**Lifelong Learning** *Students will:* • relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field • assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals • create a pathway of senior high school courses to reflect learning goals • identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will practise the skills and abilities needed to manage change.	**Adapting to Change** *Students will:* • identify goals, responsibilities and commitments • assess and reflect on the success of an action plan; e.g., – create alternative choices to deal with unexpected change – identify stressors in personal environments that they can and cannot change • identify the need for personal support and create an inventory of available personal and community sources of support.
Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths • work in and seek out a variety of roles and responsibilities • measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work • orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.

Teamwork

Students will:

- participate effectively as group members; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- assume various roles within a group; e.g., leadership
- clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will orient themselves toward an occupation within a human care career environment.

Career Awareness

Orientation

Students will:

- identify entry-level competencies
- identify post-secondary opportunities
- recognize entrepreneurial opportunities within the industry
- introduce themselves to local business/industry operations
- match their personal interests to their job search; e.g.,
  - identify sources of support for investigating and finding work
  - describe entry-level requirements
  - recognize potential career ladders.

Standards

Students will:

- develop workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - use safe and sanitary practices
  - demonstrate pride in themselves
  - demonstrate pride in their work performance
  - show respect for others
  - respect the property of others.

Students will demonstrate safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify safety device locations and procedures within the workplace environment
- identify government regulatory bodies that support a safe workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials

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- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- select and wear personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials and Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will develop positive relationships through the communication and observation skills necessary for successful care giving.

Human Relationships

Students will:

- identify four physical needs that all humans share
- identify five psychological needs that all humans share
- distinguish between meeting personal needs and meeting those of the client and/or the client's family; e.g.,
  - describe how unmet needs may affect a client's behaviour
  - explain the importance of family and friends as part of a support system
  - describe how individuals and families differ
- describe the need for dignity
- describe the circumstances that contribute to the loss of self-esteem in the elderly
- describe how emotional control affects relationships and/or communication
- explain the relationship between losses and adjustment and/or emotional disorders
- describe defense mechanisms and their impact on interpersonal relationships
- demonstrate techniques for working with children and other family members; e.g.,
  - demonstrate a genuine interest in older adults
  - demonstrate patience with, and understanding of, older adults
  - possess the ability to work independently and in a group
  - demonstrate empathy and understanding
  - demonstrate active listening skills.

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Students will identify and provide various forms of assistance to aid a client.

Client Assistance

Students will:

- identify the various types of care and care situations; e.g., in-home care, adult care facility
- identify various needs and common tasks when providing assistance; e.g., shopping, transportation, recreation, cleaning
- describe the client's need for privacy and confidentiality
- explain the role of the worker in assisting a client with social and leisure activities; e.g., reading, board games, music
- identify the worker's limitations in handling business matters for a client; e.g.,
  - explain the procedures to be followed when assisting with personal matters; e.g., writing a cheque, dictating a letter, banking, paying bills, record keeping, borrowing or lending money
- apply principles of nutrition to meet the daily food requirements of older adults; e.g.,
  - identify common dietary deficiencies and disorders associated with older adults
  - create a dietary plan to accommodate dietary deficiencies and disorders
- demonstrate safe procedures in using special equipment; e.g., wheelchairs and walkers
- identify procedures for safe lifts and transfers from wheelchairs or beds
- identify typical in-home care maintenance and cleaning procedures; e.g., shovelling snow, moving items in the house, doing dishes.

Students will identify and demonstrate safe procedures for providing home care.

Safe and Sanitary Environment

Students will:

- complete a standard first-aid course
- complete a cardiopulmonary resuscitation (CPR) course
- practise the evacuation of a client in the event of fire
- demonstrate how to operate a fire extinguisher
- describe how the spread of disease is controlled in the home in kitchens and bathrooms and when doing laundry, dusting and handling food; e.g.,
  - demonstrate the proper storage and preparation of hot and cold foods
  - practise sanitation procedures
  - use personal sanitation measures to prevent the spread of infection and disease
- identify the safety measures necessary for maintaining a safe environment; e.g., clear traffic areas, rugs secured to the floor, few electrical hazards and the use of safety bars
- identify hazardous elements in an older person's home or care facility.

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Students will identify various equipment used to help individuals maintain independence.	**Home Modification** *Students will:* • determine appropriate caregiver strategies to accommodate the physical limitations of older adults • identify and install various forms of equipment to aid in mobility and safety for the in-home care of older adults • identify considerations when selecting housing, furnishings, clothing and transportation appropriate for older adults functioning at various levels • evaluate the relationship between the client's daily level of activity and the level of assistance needed • identify the types of clothing the elderly or disabled person could use to provide greater ease in dressing and undressing • demonstrate appropriate physical procedures used to assist clients with decreased mobility, decreased vision or blindness, decreased sensory acuity and mental confusion.

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Students will continue to develop an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials; e.g.,
  - use related occupational terms
  - identify occupation-related literature
  - interpret and follow written instructions
- select and create a text format to suit a purpose and audience, e.g., forms, letters, reports, memos, résumé, and:
  - describe uses of writing skills in related occupations
  - write a letter of inquiry
  - write a letter of thanks
  - complete job applications
- listen and present information in a clear, concise manner; e.g.,
  - listen attentively to organize and classify information and ideas
  - organize main ideas and key messages with clarity.

THINKING

Students will apply creative thinking skills to solve problems.

Problem Solving, Decision Making and Creative Thinking

Students will:

- apply a problem-solving model to identify the problem/issue
- identify appropriate actions and develop several alternatives for each promising idea
- evaluate the results, in terms of expected outcomes related to the initial problem, and evaluate personal satisfaction with the outcome of the idea; e.g., product/process.

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NUMERACY

Students will apply mathematical concepts to solve occupational problems.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion to solve problems in a meaningful context
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will enhance their performance by using information technology to help complete tasks.

Computer Operations and Computer Applications

Students will:

- demonstrate appropriate language and etiquette when using information technology
- demonstrate appropriate telephone operations; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- demonstrate basic computer operations to complete a task; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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HOME CARE 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Achieving Results	• Students will prepare for entry-level employment within a home care career environment. • Students will demonstrate entry-level standards of safe workplace practices and procedures. • Students will identify the legislation and procedures for providing care to older adults. • Students will identify and provide proper recreation activities and nutritional meals for older adults. • Students will demonstrate assistance care for older adults. • Students will develop an awareness of the emotional needs of elderly clients.
Ensuring Quality	• Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.
Academic Competencies	**Students will continue to develop these minimum academic competencies that provide a foundation for further learning.**
Communication	• Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.
Thinking	• Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.
Numeracy	• Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.
Information Technology	• Students will demonstrate the effective use of information technology to perform daily workplace operations.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.

Lifelong Learning

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - identify opportunities for further education/training
  - locate needed financial support systems
  - locate needed personal support systems
- practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals
- create a plan that demonstrates continuous learning; e.g.,
  - analyze requirements for graduation and for further education/training
  - modify a learning plan to reflect requirements and opportunities.

Students will manage change effectively to support their goals.

Adapting to Change

Students will:

- prioritize and assign resources to meet commitments and goals
- prioritize commitments and goals to achieve a balanced lifestyle
- redefine an action plan as situations change; e.g.,
  - use adaptive strategies
  - redefine personal goals
  - select personal coping mechanisms
- access available and appropriate sources of support
- identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will prepare for entry-level employment within a home care career environment.

Career Awareness

Preparation

Students will:

- assess entry-level competencies
- recognize opportunities for further education/training
- select post-secondary opportunities
- identify local entrepreneurs
- establish contacts with local businesses/industries
- present marketable skills and strengths; e.g.,
  - write a letter of application
  - prepare a résumé
  - complete application forms
  - identify contacts and references
  - collect evidence of competencies in a portfolio.

Standards

Students will:

- demonstrate workplace protocols, procedures and standards of conduct; e.g.,
  - demonstrate appropriate work habits
  - demonstrate effective human relations techniques in the workplace
  - practise safety in the workplace
  - demonstrate acceptable verbal and nonverbal communication skills
  - practise personal and public hygiene procedures
  - demonstrate entry-level competency in tools and equipment usage
  - use supplies correctly
  - follow good storage practices
  - demonstrate pride in their work performance
  - demonstrate a willingness to work
  - demonstrate respect for others
  - follow accepted principles and procedures
  - recognize opportunities for further education/training.

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Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Health and Safety

Students will:

- identify and explain the use of safety devices within the workplace
- demonstrate knowledge of, and the ability to access information about, Occupational Health and Safety (OHS) and the Workers' Compensation Board (WCB)
- demonstrate a prework and postwork hazard assessment
- demonstrate knowledge of, and adherence to, safety rules that are specific to available tools, equipment and materials
- demonstrate knowledge of health hazards associated with the use of chemicals and materials and retrieve information on Material Safety Data Sheets (MSDS) using appropriate print and Internet resources
- model safety consciousness by selecting and wearing personal protective equipment (PPE) appropriate to the specific task
- demonstrate knowledge of environmental issues relating to the procedures for handling hazardous waste
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements.

Students will identify the legislation and procedures for providing care to older adults.

Elder Care and Legislation

Students will:

- describe the aging process
- describe the characteristics and needs of older adults
- identify the laws, trends and issues affecting older adults
- determine the role of older adults, their status and contributions in various cultures
- identify the rights and responsibilities of the home caregiver, the family and the employer; e.g.,
  - encourage patient independence
  - assist patient to meet basic needs
  - basic housekeeping tasks
- describe the rights and responsibilities of older adults as clients; e.g.,
  - exhibit ethical practices in providing services for older adults
  - identify strategies for advocating the rights of older adults
- identify the ethical and legal responsibilities of the caregiver
- explain the need for effective communication amongst all parties involved
- identify support resources available in the community
- identify community resources for assistance in emergencies
- identify possible signs of illness in older adults
- describe types of elder abuse and neglect and methods to prevent these situations.

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Students will identify and provide proper recreation activities and nutritional meals for older adults.

Recreation and Nutrition

Students will:

- identify appropriate, intellectually stimulating activities to meet the varying needs of older adults
- research activities to promote health and wellness; e.g.,
  - implement routine procedures
  - explain how daily living and recreational activities can be used therapeutically
  - plan and implement age-appropriate games and activities
- recognize the need for friendship and communication
- explain the role of the worker in assisting a client with social and leisure activities; e.g., reading, board games, music
- describe communication and guidance techniques appropriate for older adults functioning at various levels
- analyze the influences of technology on the health care and lifestyles of older adults
- use appropriate technology applications that enhance opportunities to maintain involvement, pursue lifelong learning and continue to make contributions to society
- apply principles of nutrition to meet the daily food requirements of older adults; e.g.,
  - identify common dietary deficiencies and disorders
  - create a dietary plan.

Students will demonstrate assistance care for older adults.

Client Assistance

Students will:

- identify various occupations and duties within the field of human care; e.g.,
  - continuing care
  - active treatment
  - rehabilitation
  - community health
- demonstrate proper aseptic techniques to use in the maintenance of personal hygiene and the cleaning and maintenance of supplies and equipment
- demonstrate the proper use and disposal of barrier devices; e.g., gloves, masks, bandages, dressings
- demonstrate the basic activities required to assist with daily living; e.g., oral, hair and skin care; dressing; toileting; exercise; bathing and feeding
- demonstrate the correct techniques for administering personal care; e.g., lifting and transferring, changing body position, use of mechanical aids
- demonstrate the correct techniques for:
  - taking and recording vital signs
  - treating sprains, strains and dislocations
  - applying and changing bandages and dressings
- identify massage techniques
- identify symptoms and treatments for skin disorders relevant to being bedridden; e.g., bed sores
- create a fire escape plan for bedridden and/or wheelchair-bound patients.

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Students will develop an awareness of the emotional needs of elderly clients.

Emotional Care

Students will:

- demonstrate well-developed communication and observation skills necessary for successful caregiving; e.g.,
  - a genuine interest in older adults
  - patience, empathy and understanding
  - the ability to work independently and in a group
- describe the physical, social, emotional and mental changes that may take place during the ageing process
- identify the emotional needs of older adults
- demonstrate patience and empathy with a patient's negative emotions; e.g., sadness, anger, frustration, depression, grief
- describe the techniques that promote emotional adjustment to losses
- describe the symptoms of depression
- describe how to give emotional support to a dying client and the family
- understand the importance of patient confidentiality.

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Students will demonstrate an understanding of the value of effective task management processes by applying knowledge and skills to simulated and actual work situations.

Task Management

Outcomes

Students will:
- read and/or listen to instructions
- ask questions to clarify expected outcomes, procedures and timelines.

Decision Making

Students will:
- identify the parameters of the task
- generate and review alternative ideas and their consequences
- make a decision or select an idea.

Planning

Students will:
- identify the steps involved in managing a project
- prepare a sample project plan, including budget and timeline
- identify available tools, equipment and materials.

Performance Standards

Students will:
- identify expected standards for a product or service
- work to agreed quality standards and specifications
- select and use appropriate tools and technology for a task or project.

Evaluation

Students will:
- identify opportunities for improving quality
- establish expectations and measures for improvements
- create evidence to support an understanding of task management and skill development for inclusion in a personal portfolio.

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ACADEMIC COMPETENCIES: These are the minimum academic competencies that provide a foundation for further learning. The following outcomes are provided as a reminder to address these academic competencies within the occupational context and to reinforce cross-curricular connections.

COMMUNICATION

Students will demonstrate effective listening, speaking, reading and writing skills to prepare for employment.

Listening, Speaking, Reading and Writing

Students will:

- read, view and interpret occupation-related materials for a specific purpose; e.g.,
  - read related health and safety documents
  - read terms of employment documents
  - follow written instructions specific to an occupational area
- create text for a specific purpose that clearly communicates information; e.g.,
  - write a résumé
  - write a job description
  - submit job application forms
- communicate thoughts and ideas and listen to the thoughts and ideas of others to effectively complete a task; e.g.,
  - follow oral instructions
  - give effective oral instructions when necessary.

THINKING

Students will research information, use creative thinking skills and use effective problem-solving strategies to solve problems.

Problem Solving, Decision Making, Finding Information and Creative Thinking

Students will:

- demonstrate an effective problem-solving model; e.g.,
  - identify the need for a solution to a problem/issue
  - identify why information is needed; e.g., make decisions, inform, persuade
- identify appropriate actions and select and apply information that meets their purposes and needs
- evaluate the results in terms of expected outcomes and assess the impact of information on their purpose and audience.

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NUMERACY

Students will demonstrate mathematical operations to effectively solve problems in a meaningful context.

Basic Operations, Patterns and Relationships, Shape and Space, and Statistics and Probability

Students will:

- apply arithmetic operations, e.g., addition, subtraction, multiplication or division, to whole numbers and decimals and use number operations when creating and solving money problems
- use calculators or computers, to perform calculations involving large and small numbers, when solving problems
- apply concepts of rate, ratio, percentage and proportion
- demonstrate a number sense for whole numbers 0 to 100 000 and explore proper fractions and decimals
- estimate, measure and compare, using decimal numbers and standard units of measure, to solve problems in everyday contexts; e.g., mass, length, volume, time, perimeter, surface area
- use metric and imperial units of measure.

INFORMATION TECHNOLOGY

Students will demonstrate the effective use of information technology to perform daily workplace operations.

Computer Operations and Computer Applications

Students will:

- model and assume personal responsibility for the ethical use of information technologies
- demonstrate appropriate telephone operations within the workplace; e.g., answer telephone calls appropriately, locate numbers and make telephone calls
- use computer operations to assist in the completion of daily workplace operations; e.g.,
  - use basic keyboarding skills
  - store, organize and retrieve information correctly
  - locate and select information and ideas using appropriate technology and information systems; e.g., Internet
  - access, send and retrieve e-mail and attachments
- demonstrate procedures for connecting and using audio, video and digital equipment
- demonstrate procedures for sending and receiving faxes and setting up a fax machine
- demonstrate procedures for copying and printing documents.

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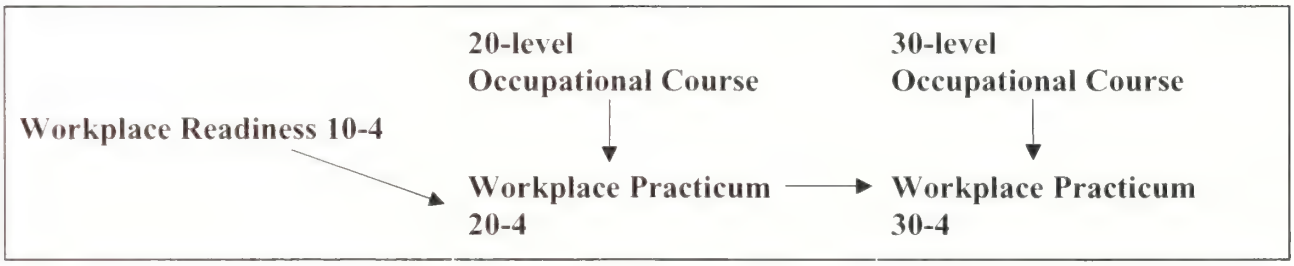
KNOWLEDGE AND EMPLOYABILITY WORKPLACE READINESS

COURSE SEQUENCE



Workplace Readiness 10-4 is designed to support students and prepare them for the working world. Workplace Practicum 20-4 is designed to either accompany or follow the completion of a Knowledge and Employability 20-level occupational course. Workplace Practicum 30-4 is designed to complement the equivalent prerequisite occupational course. These courses enhance knowledge and skills acquired through the occupational component and provide a practical environment to develop and demonstrate employability skills.

There is considerable research to support the concept that the workplace is an extension of the school and the school is an extension of the workplace. Experiential and/or applied learning is increasingly viewed as a means to enhance formal learning systems by making learning more relevant and meaningful to the student.

Workplace Readiness 10-4 and CTR1010 are similar in that each is a prerequisite for participation in off-campus work experiences.

Students should be placed in a work-based learning environment either on- or off-campus.

Knowledge and Employability Workplace Readiness courses will help students to make informed decisions about their school–career transitions. Each course is viewed as a partnership among the student, community and school. This partnership provides students with the opportunity to explore and expand their occupational interests, knowledge and skills in meaningful activities situated in work-based environments.

The Workplace Readiness placement is not required to be in a field related to the 10-level occupational courses; however, the 20- and 30-level occupational courses are a prerequisite for participation in the Workplace Practicum courses.

Goals of Workplace Readiness Courses

- Allow students to develop the skills needed to find and acquire a position and be successful in the workplace.
- Provide opportunities for students to apply essential, employability and workplace competencies, acquired through the occupational component, in the workplace.

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- Develop an understanding about the demands of the workplace and the rights and responsibilities of both the employee and employer.
- Provide opportunities for students to explore their personal strengths and interests, related to future life and career opportunities, within community-based work placements.
- Promote the development of community partnerships, which connect the school with a larger community that surrounds and supports the school, to assist students to transition from school to the workplace.

Benefits of Workplace Readiness Courses

- Provide students with hands-on experience to help them relate their schooling to everyday life in the workplace and community.
- Develop student awareness of the essential characteristics of an employee/employer relationship and prepare students to learn, and apply their understanding of, these characteristics.
- Provide occupational preparation for entry into the world of work.
- Provide students with an opportunity to develop life skills in the areas of goal setting, decision making and problem solving.
- Promote the development of self-esteem, self-awareness and self-assertion through social interaction at a student's place of employment or in the community.
- Encourage students to continue their education and to seek post-secondary education or training appropriate to their career, educational, personal and social aspirations.
- Assist students in developing and expanding their employability and work skills.
- Foster positive student expectations and attitudes toward self, others, school and work.
- Provide students with an opportunity to gain knowledge and work experience in a career area of their choice.
- Encourage cooperation between the business community and the educational system.
- Provide employers with a talent pool of trained and prepared potential employees.

Course Credits

Workplace Readiness 10-4 and Workplace Practicum 20-4 and 30-4 are all 5-credit courses. Credits are earned toward the requirement for a Certificate of High School Achievement or an Alberta High School Diploma.

Workplace Practicums can be extended in time and credits by allocating work experience credits (3–10) to the 5-credit practicum course. Students may access more than one practicum at the 20–30 levels, depending upon the number of corresponding prerequisite occupational courses they have taken. Credits earned for a practicum course, combined with a Knowledge and Employability occupational course, should be recorded separately.

Time Allocations

Course	In-class Instruction	Off-campus Experience
Workplace Readiness 10-4	40–80 %	20–60 %
Workplace Practicum 20-4	20–30 %	70–80 %
Workplace Practicum 30-4	10–20%	80–90 %

Assessment

Skills developed in an occupational course can be enhanced and improved through the Workplace Readiness courses. Skills developed in both the employability and occupational components can be assessed for proficiency. An employer can access this assessment to review a student's work habits, knowledge and skill levels.

Course	Employability Skills %	Occupational Skills %
Workplace Readiness 10-4	80	20
Workplace Practicum 20-4	60	40
Workplace Practicum 30-4	40	60

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WORKPLACE READINESS 10-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will develop an awareness of how learning contributes to personal success. • Students will develop an ability to manage change effectively. • Students will explore and discover personal aptitudes and interests related to occupational opportunities.
Personal Management	• Students will develop self-esteem, confidence and the ability to set personal goals and priorities. • Students will identify and understand the risks associated with occupational activities.
Working with Others	• Students will develop communication skills and strategies in an occupational context. • Students will demonstrate respect for the thoughts and opinions of others in the group. • Students will demonstrate positive effort and behaviour toward achieving a group's goals.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Self-awareness	• Students will identify learning practices to explore personal abilities, develop goals and create awareness.
Career Awareness	• Students will explore a variety of occupations within a career field.
Job Management	• Students will develop basic job management competencies to be successful in the workplace.
Workplace Safety	• Students will develop safe workplace practices and procedures.
Work-based Learning	• Students will apply employability and occupational skills to a work-based learning experience.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will develop an awareness of how learning contributes to personal success.	**Lifelong Learning** *Students will:* • identify learning preferences and strengths and apply learning styles and strategies appropriate to the situation • set learning goals and identify how formal/informal learning can help them achieve goals • develop an awareness of senior high school courses and work experience and identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.
Students will develop an ability to manage change effectively.	**Adapting to Change** *Students will:* • identify available support resources and assess potential barriers • prepare an action plan to proactively respond to a particular change or challenge.
Students will explore and discover personal aptitudes and interests related to occupational opportunities.	**Career Development** *Students will:* • create an inventory of personal competencies, interests, goals and work preferences and link this inventory to career options • identify sources of support for investigating and finding work; e.g., Alberta Learning Information Service (ALIS) Web site • describe how work contributes to individual goals • explore the workplace through community partnerships and identify employer and employee expectations, rights and responsibilities.

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PERSONAL MANAGEMENT

Students will develop self-esteem, confidence and the ability to set personal goals and priorities.

Self-development

Students will:

- identify personal characteristics, strengths and talents and establish an action plan to build on them
- recognize the use of strengths and talents to achieve goals
- identify acceptable and appropriate behaviours and present themselves to suit an activity or role; e.g., body language, grooming, clothing, manners
- describe personal beliefs about what is right and wrong and assess the consequences of ethical/unethical behaviours.

Students will identify and understand the risks associated with occupational activities.

Risk Management

Students will:

- identify current health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify risks that could impact themselves and others and identify hazards in the work environment; e.g., chemical, physical, biological and ergonomic
- identify a potential emergency situation and develop strategies for personal emergency responses
- identify sources of support when taking risks in their personal lives and in the workplace; e.g., entrepreneurship.

WORKING WITH OTHERS

Students will develop communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- demonstrate appropriate communication strategies for communicating thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate language and body language
- develop awareness of verbal and nonverbal communication strategies
- improve their ability to communicate by working with others
- communicate common goals and expectations to improve their team's ability to achieve goals
- identify causes of conflict.

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Students will demonstrate respect for the thoughts and opinions of others in the group.

Building Community

Students will:

- identify commonly accepted courteous behaviour
- assess and respect how their personal values and beliefs differ from those of others and how those beliefs impact personal behaviour
- identify the value of volunteering in community activities; e.g., charity work, community car wash.

Students will demonstrate positive effort and behaviour toward achieving a group's goals.

Teamwork

Students will:

- identify team goals
- work independently and with others to support team goals; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- establish short- and long-term team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will identify learning practices to explore personal abilities, develop goals and create awareness.

Self-awareness

Students will:

- define and describe lifelong learning
- define and describe the value of lifelong learning
- understand the importance of planning and preparing for their life and work paths
- understand the senior high school learning pathways and graduation requirements
- use self-assessment tools to identify their learning styles and preferences; e.g., visual, auditory, kinesthetic
- use self-assessment tools to identify their abilities and attitudes
- identify and understand their personal limitations
- build tolerance and understanding of individual differences; e.g., race, age, gender
- understand how individual characteristics contribute to goal achievement; e.g., interests, skills, values, beliefs and attitudes
- recognize how academic and practical skills are transferable in a variety of work alternatives
- identify the skills they have developed through school subjects and community experiences and explain how these skills are transferable to work and other life roles
- recognize the value of short-term and long-term career plans through the setting of goals.

Students will explore a variety of occupations within a career field.

Career Awareness

Students will:

- recognize the differences between a job and a career
- recognize the job search as a process; e.g.,
  - locate jobs
  - search out career paths
  - understand employer expectations
- identify the components of a job application; e.g., résumé, portfolio

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- identify the proper process of, and the conduct required in, a job interview
- recognize that networking, the Internet and print resources can be used to find employment opportunities and to apply for employment
- produce a student-learning plan to identify goals for their schooling to meet their future employment considerations
- experience volunteering as a pro-active job-search strategy.

Students will develop basic job management competencies to be successful in the workplace.

Job Management

Standards

Students will:

- identify employee/employer rights and responsibilities; e.g.,
  - identify and describe employee rights as outlined in the *Alberta Labour Relations Code*, such as
    - minimum wage
    - hours of work
    - days of rest
    - holidays and holiday pay
    - pay periods
    - termination of employment
  - identify pay cheque deductions
  - recognize the responsibilities that come with a pay cheque
- identify workplace protocols, procedures and standards of conduct in a variety of workplace settings; e.g.,
  - identify related health and sanitation standards
  - display punctuality and come prepared for classroom and shop/laboratory activities
  - treat other members of the team with respect
  - use appropriate language and terminology
  - identify appropriate dress
- identify and describe the professional behaviour appropriate to a selected work area; e.g.,
  - use appropriate language
  - show respect and courtesy for clients and coworkers
  - respond appropriately to praise, complaints and criticism
  - focus on the task at hand without distraction
  - demonstrate safe and healthy workplace practices and clean-up procedures
  - use appropriate tools, following directions and the manufacturer's instructions
- identify the personal qualities that are needed to keep a job; e.g., dependability, promptness, getting along with others
- identify and describe the value of initiative or a work ethic on the job
- demonstrate the ability to take responsibility for their actions
- identify and describe appropriate employee/employer and client/contractor interactions in specific situations

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- demonstrate the use of personal management tools; e.g., agendas, time sheets, schedules
- describe decision-making and problem-solving processes
- demonstrate personal management skills; e.g., time management, problem solving, stress management, life/work balance.

Students will develop safe workplace practices and procedures.

Workplace Safety

Personal Safety Awareness

Students will:

- identify and demonstrate personal safety awareness; e.g.,
  - identify the proper use of tools with regard to other employees and shop/laboratory conditions
  - identify the need for a safe and clean work area
  - identify the consequences of alcohol and drug use on the worker and workplace.

Safety Procedures and Agencies

Students will:

- identify national, provincial and local health and safety-related agencies, departments and organizations; e.g., research agencies for related duties and responsibilities, such as the Workers' Compensation Board (WCB), Occupational Health and Safety (OHS)
- identify the required elements of an emergency response plan
- identify employee information requirements for a workplace injury incident report
- evaluate how lost-time claims affect an organization or business.

Workplace Safety Planning

Students will:

- demonstrate workplace safety planning; e.g.,
  - identify safety device locations in the shop or classroom; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - identify the profile of a safety conscious worker/employer
  - identify and define imminent danger.

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Hazard Identification and Management

Students will:

- identify the various causes of workplace hazards; e.g.,
  - physical
  - biological
  - chemical
  - ergonomic
  - psychosocial
- identify the three basic steps to follow to ensure safety in the workplace; i.e.,
  - hazard identification
  - hazard evaluation
  - hazard control.

PPE/WHMIS

Students will:

- identify personal protective equipment (PPE); e.g., coveralls, proper eyewear, proper footwear
- demonstrate an understanding of the Workplace Hazardous Materials Information System (WHMIS) as it relates to the field of study and identify WHMIS symbols, classes and labelling requirements; e.g., identify available WHMIS training programs.

First-aid Awareness

Students will:

- identify first-aid regulations and procedures
- identify available first-aid programs; e.g., St. John's Ambulance.

Students will apply employability and occupational skills to a work-based learning experience.

Workplace Learning

Exploration

Students will:

- experience the world of work through various off-campus activities; e.g.,
  - site visits
  - job shadowing
  - mentorships
  - work study
- demonstrate employability and occupational competencies in the work environment.

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WORKPLACE PRACTICUM 20-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will apply their abilities and interests toward achieving learning goals. • Students will practise the skills and abilities needed to manage change. • Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities. • Students will understand risks and be accountable for their actions.
Working with Others	• Students will practise effective communication skills and strategies in an occupational context. • Students will demonstrate the ability to understand and work within the culture of a group. • Students will plan and make decisions with others.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Self-awareness	• Students will review and assess current learning pathways to establish future goals.
Career Awareness	• Students will orient themselves toward a position within a career field.
Job Management	• Students will demonstrate basic job management competencies to be successful in the workplace.
Workplace Safety	• Students will demonstrate safe workplace practices and procedures.
Work-based Learning	• Students will apply employability and occupational skills to a work-based learning experience.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will apply their abilities and interests toward achieving learning goals.

Lifelong Learning

Students will:

- relate learning preferences and strengths to formal and informal learning opportunities and identify post-secondary opportunities within the related field
- assess learning goals and current competencies, identify competencies needing development and identify and prioritize learning goals
- create a pathway of senior high school courses to reflect learning goals
- identify educational possibilities; e.g., Registered Apprenticeship Program (RAP), Green Certificate, Career and Technology Studies (CTS) and Career Internship.

Students will practise the skills and abilities needed to manage change.

Adapting to Change

Students will:

- identify goals, responsibilities and commitments
- assess and reflect on the success of an action plan; e.g.,
  - create alternative choices to deal with unexpected change
  - identify stressors in personal environments that they can and cannot change
- identify the need for personal support and create an inventory of available personal and community sources of support.

Students will orient themselves toward an occupation that reflects their personal aptitudes and interests.

Career Development

Students will:

- assess work preferences and nonpreferences (e.g., indoor, outdoor, shift work), assess life/work options and outline career goals and paths
- work in and seek out a variety of roles and responsibilities
- measure and celebrate personal contributions to workplace goals; e.g., paid, unpaid or volunteer work
- orient themselves to the workplace through community partnerships and assess personal performance in terms of workplace expectations.

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PERSONAL MANAGEMENT

Students will increase their self-esteem and confidence and enhance their ability to set personal goals and priorities.

Self-development

Students will:

- re-evaluate an action plan to develop strengths and talents
- use strengths and talents to achieve personal goals
- clarify acceptable and appropriate behaviours for specific activities and roles
- act ethically in personal, community and workplace contexts and accept the consequences of their actions.

Students will understand risks and be accountable for their actions.

Risk Management

Students will:

- follow health and safety procedures; e.g., at home, at school, in the community and in the workplace
- identify potential hazards, take corrective action and develop and practise action plans to ensure safety
- practise personal emergency responses
- assess their comfort level with, and the consequences of, taking risks.

WORKING WITH OTHERS

Students will practise effective communication skills and strategies in an occupational context.

Interpersonal Communication

Students will:

- assess the effectiveness of communication strategies used to communicate thoughts and feelings; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- assess verbal and nonverbal communication strategies
- apply social norms to build specific relationships
- demonstrate the ability to accept praise and/or criticism.

Students will demonstrate the ability to understand and work within the culture of a group.

Building Community

Students will:

- interact with others in a courteous manner
- accommodate the beliefs of others in work and personal environments and show respect for differences in beliefs, abilities, etiquette and styles of interaction
- identify opportunities for participation in community growth.

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Students will plan and make decisions with others.	**Teamwork** *Students will:* • participate effectively as group members; e.g., – generate ideas – assess resources – contribute abilities and interests – monitor progress – share responsibility for completion of a task • assume various roles within a group; e.g., leadership • clarify the expected outcomes of teamwork.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will review and assess current learning pathways to establish future goals.

Self Awareness

Students will:

- assess learning goals; e.g.,
  - assess current competencies
  - identify competencies needing development
  - identify and prioritize learning goals
- review and adapt their senior high school course pathway to reflect learning goals and identify education/career possibilities
- identify goals, responsibilities and commitments
- use their strengths and talents to achieve their personal goals
- evaluate an action plan to develop their strengths and talents
- clarify acceptable and appropriate behaviours for specific activities and roles
- identify the need for personal support; e.g., create an inventory of available personal and community sources of support.

Students will orient themselves toward a position within a career field.

Career Awareness

Students will:

- use the job search process to investigate possible employment, career paths and expectations; e.g.,
  - use the Internet and other media to search for and investigate possible job opportunities
- implement a learning plan that matches their future employment goals
- demonstrate the skill, knowledge and attitudes necessary for a successful interview; e.g., practise answering general interview questions
- identify the characteristics of a potential employer; e.g.,
  - identify the products or services provided
  - identify various employee positions and roles
  - assess the potential for sustainability and advancement within an occupation/career path
- update, complete and submit a job application to potential employers; e.g., include a résumé.

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Students will demonstrate basic job management competencies to be successful in the workplace.

Job Management

Standards

Students will:

- transfer knowledge of workplace protocols, procedures and standards of conduct to the workplace; e.g.,
  - clean the entire work area
  - return tools and equipment to their designated storage areas
  - minimize the waste of materials
  - treat the workplace with care and attention to potential health and safety risks
  - wear appropriate dress
- develop the professional behaviour appropriate to a selected work area; e.g.,
  - use appropriate language
  - show respect and courtesy for clients and coworkers
  - respond appropriately to praise, complaints and criticism
  - focus on the task at hand without distraction
  - demonstrate safe and healthy workplace practices and clean-up procedures
  - use appropriate tools, following directions and the manufacturer's instructions.

Students will demonstrate safe workplace practices and procedures.

Workplace Safety

Personal Safety Awareness

Students will:

- identify the characteristics of a safety-conscious employee
- demonstrate personal safety awareness; e.g.,
  - wear appropriate personal protective equipment (PPE)
  - use, maintain and store, safely, tools, equipment and materials specific to the workplace
  - identify safety device locations in the workplace; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - identify potential safety hazards in the workplace.

Safety Procedures and Agencies

Students will:

- recognize national, provincial and local health- and safety-related agencies, departments and organizations; e.g., research agencies for related duties and responsibilities, such as the Workers' Compensation Board (WCB), Occupational Health and Safety (OHS)
- identify company-specific elements of an emergency response plan

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- identify employee information requirements for a workplace injury incident report
- identify the certification needed and the training programs provided in the workplace; e.g.,
  - first aid
  - hydrogen sulfide (H2S)
  - the Workplace Hazardous Materials Information System (WHMIS).

Students will apply employability and occupational skills to a work-based learning experience.

Workplace Learning

Work-based Learning (off-campus)

Students will:

- demonstrate the workplace skills defined for the work placement, consulting the:
  - student
  - employer
  - teacher
  - occupational program of studies
- demonstrate employability competencies; e.g.,
  - Managing Transitions
  - Personal Management
  - Working with Others.

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WORKPLACE PRACTICUM 30-4
GENERAL OUTCOMES

Employability Competencies	**Students will develop these competencies throughout the learning process and demonstrate them in daily life and the workplace.**
Managing Transitions	• Students will consistently demonstrate personal discovery and continuous learning. • Students will manage change effectively to support their goals. • Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.
Personal Management	• Students will exhibit self-esteem and confidence through the achievement of personal goals. • Students will manage risks to achieve both personal and workplace goals.
Working with Others	• Students will model effective communication skills and strategies in the home, school, community and workplace. • Students will promote equity in work and community endeavours. • Students will demonstrate the ability to complete tasks in a team environment.
Occupational Competencies	**Students will develop and demonstrate the following competencies to succeed in a specific occupation or career.**
Self-awareness	• Students will build support systems and competencies to successfully transition into the workplace or post-secondary training.
Career Awareness	• Students will prepare for entry-level employment within a career field.
Job Management	• Students will demonstrate entry-level job management competencies to be successful in the workplace.
Workplace Safety	• Students will demonstrate entry-level standards of safe workplace practices and procedures.
Work-based Learning	• Students will apply employability and occupational skills to a work-based learning experience.

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EMPLOYABILITY COMPETENCIES: These competencies are developed throughout the learning process and are demonstrated in daily life and the workplace. Students will develop and demonstrate these competencies through individual effort and interpersonal interaction while completing a variety of projects/activities.

MANAGING TRANSITIONS

Students will consistently demonstrate personal discovery and continuous learning.	**Lifelong Learning** *Students will:* • identify learning opportunities related to learning goals, commitments and resources; e.g., – identify opportunities for further education/training – locate needed financial support systems – locate needed personal support systems • practise what has been learned to build competence and confidence and evaluate the application of competencies to learning goals • create a plan that demonstrates continuous learning; e.g., – analyze requirements for graduation and for further education/training – modify a learning plan to reflect requirements and opportunities.
Students will manage change effectively to support their goals.	**Adapting to Change** *Students will:* • prioritize and assign resources to meet commitments and goals • prioritize commitments and goals to achieve a balanced lifestyle • redefine an action plan as situations change; e.g., – use adaptive strategies – redefine personal goals – select personal coping mechanisms • access available and appropriate sources of support • identify opportunities for improvement and innovation; e.g., entrepreneurship.

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Students will prepare themselves for entry-level employment in an occupation that reflects their personal aptitudes and interests.	**Career Development** *Students will:* • analyze elements of job satisfaction; e.g., recognition, environment, pay, benefits, prestige • build personal career paths and networks • analyze how work contributes to societal and economic needs and a sense of responsibility • prepare for employment through community partnership activities and organize and complete specific job tasks effectively and efficiently.

PERSONAL MANAGEMENT

Students will exhibit self-esteem and confidence through the achievement of personal goals.	**Self-development** *Students will:* • continue to create a long-term self-development plan in which they consider accomplishments and redefine self-development goals • demonstrate entry-level self-presentation appropriate to the activity and role • maintain a high standard of personal ethics when interacting with others.
Students will manage risks to achieve both personal and workplace goals.	**Risk Management** *Students will:* • maintain health and safety procedures; e.g., at home, at school, in the community and in the workplace • monitor success in reducing the impact of hazards on themselves and others • demonstrate concern for the safety of others by exhibiting appropriate behaviour in the workplace • work with others to respond to emergencies • take planned risks to contribute to personal growth.

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Students will model effective communication skills and strategies in the home, school, community and workplace.

Interpersonal Communication

Students will:

- communicate thoughts and feelings appropriately; e.g.,
  - listen without interrupting
  - contribute to be heard
  - disagree courteously
  - accept conflicting opinions
  - use appropriate body language
- maintain a balance between speaking, listening and responding
- work together to achieve goals
- demonstrate the ability to deal constructively with conflict.

Students will promote equity in work and community endeavours.

Building Community

Students will:

- demonstrate and model courteous behaviour in daily interactions
- demonstrate respect for others and a shared understanding of diverse beliefs, etiquette and styles of interaction
- assess their personal contribution to community growth.

Students will demonstrate the ability to complete tasks in a team environment.

Teamwork

Students will:

- assess the effectiveness of group and personal contributions; e.g.,
  - generate ideas
  - assess resources
  - contribute abilities and interests
  - monitor progress
  - share responsibility for completion of a task
- expand their abilities to contribute to team goals.

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OCCUPATIONAL COMPETENCIES: Students will develop and demonstrate the following competencies to succeed in a specific occupation or career. They will achieve results through a variety of projects/activities as appropriate to enhance their knowledge and skills. Students will ensure the quality of their work through effective task management and will highlight their achievements in a career-based portfolio.

ACHIEVING RESULTS

Students will build support systems and competencies to successfully transition into the workplace or post-secondary training.

Self-awareness

Students will:

- identify learning opportunities related to learning goals, commitments and resources; e.g.,
  - education/training
  - financial support systems
  - personal support systems
- create a plan that allows for continuous learning
- maintain a high standard of personal ethics when interacting with others
- continue long-term self-development planning; e.g.,
  - consider their accomplishments
  - redefine their self-development goals.

Students will prepare for entry-level employment within a career field.

Career Awareness

Students will:

- use the job search process to find and apply for possible jobs/careers, based on their goals; e.g.,
  - use the Internet and other media to investigate and find job/career opportunities
  - complete job applications
  - create a résumé
  - create a portfolio
  - attend job interviews.

Students will demonstrate entry-level job management competencies to be successful in the workplace.

Job Management

Standards

Students will:

- demonstrate entry-level knowledge of workplace protocols, procedures and standards of conduct; e.g.,
  - clean the entire work area
  - return tools and equipment to their designated storage areas
  - minimize the waste of materials

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- treat the workplace with care and attention to potential health and safety risks
- wear appropriate dress

- demonstrate professional behaviour appropriate to a selected work area; e.g.,
  - use appropriate language
  - show respect and courtesy for clients and coworkers
  - respond appropriately to praise, complaints and criticism
  - focus on the task at hand without distraction
  - demonstrate safe and healthy workplace practices and clean-up procedures
    use appropriate tools, following directions and the manufacturer's instructions.

Students will demonstrate entry-level standards of safe workplace practices and procedures.

Workplace Safety

Personal Safety Awareness

Students will:

- demonstrate the characteristics of a safety-conscious employee
- demonstrate personal safety awareness; e.g.,
  - wear appropriate personal protective equipment (PPE)
  - use, maintain and store, safely, tools, equipment and materials specific to the workplace
  - identify safety device locations in the workplace; e.g., eyewash station, emergency shut-off, fire extinguisher, emergency exits, telephone
  - identify potential safety hazards in the workplace.

Safety Procedures and Agencies

Students will:

- recognize national, provincial and local health and safety-related agencies, departments and organizations; e.g., research agencies for related duties and responsibilities, such as the Workers' Compensation Board (WCB), Occupational Health and Safety (OHS)
- evaluate company-specific elements of an emergency response plan
- identify employee information requirements for a workplace injury incident report
- identify and access the certification needed and the training programs provided in the workplace; e.g.,
  - first aid
  - hydrogen sulfide (H2S)
  - the Workplace Hazardous Materials Information System (WHMIS).

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Students will apply employability and occupational skills to a work-based learning experience.

Workplace Learning

Work-based Learning (off-campus)

Students will:

- demonstrate the workplace skills defined for the work placement, consulting the:
  - student
  - employer
  - teacher
  - occupational program of studies
- demonstrate employability competencies; e.g.,
  - Managing Transitions
  - Personal Management
  - Working with Others.

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LANGUAGE ARTS

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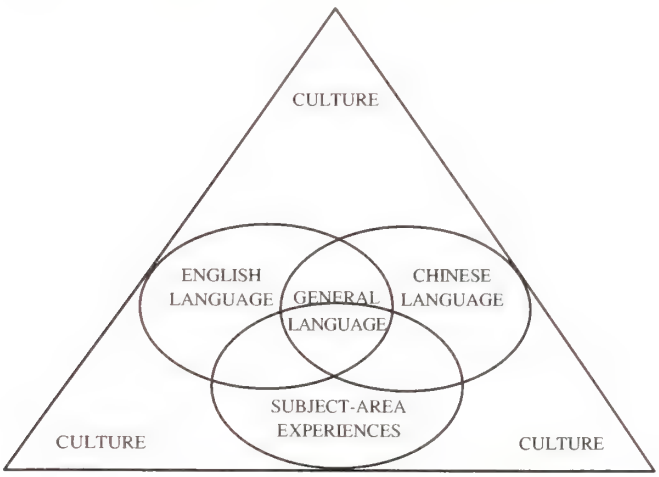
CHINESE LANGUAGE ARTS 10–20–30

INTRODUCTION

Chinese[1] language arts is an integral part of Chinese bilingual programming. The Chinese Language Arts 10–20–30 Program of Studies reflects the breadth of Chinese bilingual programming by providing outcomes for learning language and for learning about culture. However, Chinese bilingual programming as a whole includes many other learning experiences of which language and culture are only a part. In addition to Chinese language arts and English language arts, Chinese bilingual programming also includes various other subject-area experiences. The following conceptual map illustrates the relationship among these components.



BILINGUAL PROGRAMMING OVERVIEW

Bilingual programming is complex and multifaceted. It provides a rich environment for the learning of languages, cultures and subject-area content. Bilingual education strives to provide intensive language learning environments, with the potential for high academic achievement and enriched cultural experiences that maximize student opportunities for learning.

Effective bilingual learning environments are those in which:

- the individual and collective needs of students are met
- there is a supportive climate that encourages risk taking and choice
- diversity in learning styles is accommodated
- connections to prior knowledge and experiences are made
- there is exposure to a wide range of excellent models of authentic language
- use of the target language is emphasized
- quality oral, print, visual and multimedia resources are available and applied in a supportive, meaningful and purposeful manner.

1. Chinese is also commonly referred to as Guoyu, Hanyu, Huayu, Mandarin, Putonghua or Zhongwen.

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RATIONALE FOR CHINESE BILINGUAL PROGRAMMING AND CHINESE LANGUAGE ARTS

Chinese bilingual programming contributes to personal development

Chinese bilingual programming establishes an environment in which both English and Chinese are used and needed constantly for purposes of communication, personal satisfaction and learning. Students have numerous opportunities to learn and use language in meaningful, purposeful ways to meet their needs, interests and abilities. The Chinese language is used to explore ideas and experiences, to construct meaning and to communicate understanding. Effective language acquisition occurs through the integrated delivery of subject-area content, language instruction and cultural information, while fostering in students a positive attitude toward themselves and others.

Chinese language learning is a lifelong endeavour

Language learning is an active process that begins at birth and continues throughout life. Language is acquired at various rates throughout a learner's stages of growth. Students enhance their language abilities by applying their knowledge of language in new and more complex contexts with increasing sophistication. They reflect on and use prior knowledge to extend and enhance their language knowledge and understanding. The learning environment, supportive of the learner and encouraging the learner to take risks, recognizes that errors are an integral part of the language learning process. By learning, experimenting with and applying new language structures and vocabulary in a variety of contexts, students develop language proficiency.

Chinese bilingual language learning fosters cross-language competence

Most children develop a strong repertoire of language skills in their first language in preschool years. Many of these skills are transferable to new language learning. Similarly, in acquiring a new language, students develop new language learning skills that can then be applied to their first language. In this way, continuous concurrent development of first and second language skills, or skills in additional languages, is fostered through Chinese bilingual programming. Opportunities for proficiency and skill development in these languages are maximized.

Chinese bilingual language learning enhances all communication skills

The development of communication skills is vital to Chinese bilingual programming. Achievement in the six skill areas of listening, speaking, reading, writing, viewing and representing contributes to the development of effective communicators. These skills are interrelated and interdependent; facility in one strengthens and supports the others. Proficiency in these language skills involves the development of comprehension and language production. The Chinese Language Arts 10–20–30 Program of Studies is designed to promote the development of language skills for a wide range of purposes, in a wide range of contexts, at increasing levels of fluency.

Chinese bilingual language learning develops through the communicative approach

The communicative approach in second language instruction emphasizes the importance of communicating a message. Learners require support as they strive to express and understand thoughts, ideas and feelings in two languages. The accuracy of language, oral or written, although important for precision of communication, is secondary to communicating the message. The communicative approach acknowledges the important relationship between accuracy and effective communication, but places slightly less emphasis on accuracy and form.

Chinese bilingual language learning promotes the acquisition of learning strategies

Language acquisition in Chinese bilingual programming is effectively supported by providing students with explicit instruction in

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language learning strategies, language use strategies and general learning strategies. The Chinese Language Arts 10–20–30 Program of Studies, therefore, provides a variety of learning outcomes at all levels that promote the development of strategic competencies applicable to many learning circumstances.

Chinese bilingual programming promotes intracultural and intercultural awareness

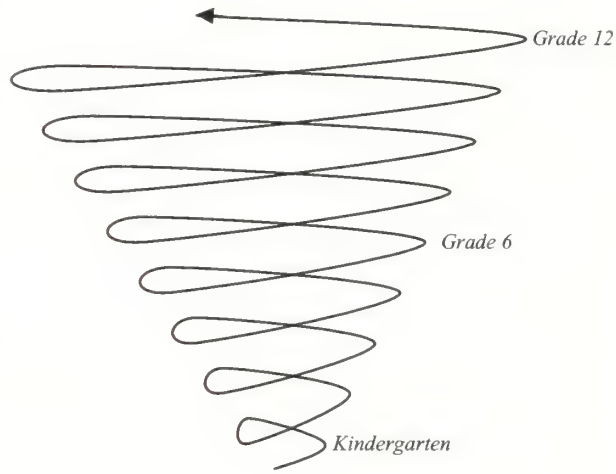
Language and culture are intensely intertwined. Language is a primary means by which cultural information is transmitted; culture influences linguistic form and content. Students in Chinese bilingual programming bring to their program a range of cultural backgrounds and experiences. The Chinese Language Arts 10–20–30 Program of Studies provides opportunities and support for students to explore their own cultural backgrounds, experiences and identities, as well as those of members of the school community, the local community and other communities of the world. The Culture section of this program of studies examines the dynamic nature of Chinese culture through the various perspectives of history, contemporary life, diversity and change. It also provides opportunities for the exploration of similarities and differences among and within world cultures.

Chinese bilingual programming develops global citizenship skills

Effective participation in the global marketplace, workplace and society requires strong communication, interpersonal and team skills, and strong knowledge and understanding of cultures. Chinese bilingual programming provides a rich environment for the development of essential knowledge, skills and attitudes that promote the development of effective global citizens and enhance the economic and career potential of students. The Chinese Language Arts 10–20–30 Program of Studies supports the intellectual, social, emotional, creative, linguistic and cultural development of students in Chinese bilingual programming.

A SPIRAL PROGRESSION

Language learning is integrative, not merely cumulative. Each new element that is added must be integrated into the whole of what has gone before. The model that best represents the students' language learning progress is an expanding spiral. Student progression is not only vertical (e.g., increased proficiency), but also horizontal (e.g., broader range of applications and experience with more text forms, contexts and so on). The spiral also represents how language learning activities are best structured. Particular vocabulary expressions, learning strategies or cultural skills and knowledge, for example, are revisited at different points in the Chinese language arts program, but from a different perspective, in broader contexts or at a slightly higher level of proficiency each time. Learning is reinforced, extended and broadened with each successive pass.



PURPOSE OF THE PROGRAM OF STUDIES

The Chinese Language Arts 10–20–30 Program of Studies provides a progression of specific outcomes across the three senior high school courses: Chinese Language Arts 10, Chinese Language Arts 20 and Chinese Language Arts 30. Most often, the outcomes reflect a progression of development intended to match the developmental stages of students. The specific outcomes for each

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course reflect the knowledge, skills and attitudes that students are expected to achieve by the end of the course. Students are expected to demonstrate the specific outcomes for the current course and build upon their prior knowledge and skills from previous grades/courses.

The Chinese Language Arts 10–20–30 program is intended for those who have studied Chinese language arts in Kindergarten to Grade 9.

The general and specific outcomes established in this program of studies are intended to be delivered in an integrated manner.

PROGRAM OVERVIEW

For ease of use, the Chinese Language Arts 10–20–30 Program of Studies is divided into two sections:

- Language Arts
  - General Language Component
  - Specific Language Component
- Culture

It is important that the sections be implemented in an integrated manner.

Language Arts

The Language Arts section of this program of studies reflects an integrated, interdependent approach to language learning within a bilingual programming context. Chinese language arts includes a General Language Component and a Specific Language Component.

The General Language Component parallels *The Common Curriculum Framework for English Language Arts, Kindergarten to Grade 12: Western Canadian Protocol for Collaboration in Basic Education,* 1998. In this manner, both English language instruction and Chinese language instruction support the development of common language knowledge, skills and attitudes. The general outcomes in the General Language Component, with only minor revisions, mirror those in the English Language Arts Framework, but the specific outcomes have been adapted and refined more extensively for delivery in Chinese.

The Specific Language Component provides the detailed linguistic elements of Chinese, descriptors of language competence for each course, and outcomes to support sociocultural/ sociolinguistic and strategic learning.

The Specific Language Component outlines the linguistic elements that students will need in order to use the Chinese language, while the General Language Component provides the context and purpose for using the language, and outlines the knowledge, skills and attitudes that students are to develop. The two components should be developed concurrently, so that the language being learned is the language that students will need and be able to apply.

Culture

The Culture section fosters the development of essential knowledge, skills and attitudes related to self, the Chinese language and culture, the community and the world.

General Outcomes

The general outcomes are broad statements that form the basis of this program of studies. Each general outcome outlines the key learnings that each section of the program is designed to support. The general outcomes describe the common goals that all students in the Chinese Language Arts 10–20–30 learning sequence are expected to achieve.

Chinese bilingual programming is designed to promote all-round personal development by fostering social, emotional, moral, intellectual and creative growth. To support this growth and development, the Chinese Language Arts 10–20–30 program is built upon the following seven general outcomes.

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Language Arts: General Language Component

General Outcome 1
Students will listen, speak, read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences.

General Outcome 2
Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts.

General Outcome 3
Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information.

General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

General Outcome 5
Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community.

Language Arts: Specific Language Component

General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

Culture

General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

Specific Outcomes

Each general outcome includes specific outcomes that students are to achieve by the end of each course. Specific outcomes are grouped under cluster headings within each of the seven general outcomes. The specific outcomes are further categorized by strands identified in the left margin. Specific descriptions are then provided in each specific outcome for each course.

It is strongly recommended when addressing any specific outcome in this program of studies that the specific outcomes prior to and following the given outcome and course be consulted for a clearer understanding as to context and intended developmental sequence. Similarly, any given specific outcome must be understood with reference to the strand and general outcome categories.

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Guide to Reading the Program of Studies

General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

cluster heading for specific outcomes

4.1 ***Generate and Focus***

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
generate ideas	1. examine ideas from personal experiences and other sources to focus a topic	1. generate, evaluate and select ideas to achieve personal communication purposes	1. consider personal needs and topic, purpose and audience when generating, evaluating and selecting ideas
choose forms	2. use a variety of forms to match content, audience and purpose	2. use and adapt a variety of forms to match content, audience and purpose	2. use a variety of forms appropriate to identified content, audience and purpose
organize ideas	3. experiment with more than one organizational structure for their own oral, print, visual and multimedia texts	3. use organizational structures and techniques encountered in listening, reading and viewing experiences to enhance their own oral, print, visual and multimedia texts	3. organize oral, print, visual and multimedia texts to achieve specific purposes

read each page vertically for outcomes expected at the end of each course

strand headings for specific outcomes

specific outcome statements for each course

read each page horizontally for developmental flow of outcomes from course to course

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LANGUAGE ARTS

General Language Component

The General Language Component has been structured and developed similarly to *The Common Curriculum Framework for English Language Arts, Kindergarten to Grade 12: Western Canadian Protocol for Collaboration in Basic Education,* 1998, but it has been adapted for delivery in Chinese. The General Language Component provides the context and purpose for the development and use of Chinese.

The commonalities with the English Language Arts Framework facilitate an integrated, contextualized approach to language learning. They also establish the essential language learnings that are common to both English language programming and Chinese language programming, supporting and promoting a collaborative and integrated approach to language instruction.

The specific outcomes established for each course reflect achievement expectations to be demonstrated in the Chinese language.

General Outcomes

The following five general outcomes outline the key learnings that the General Language Component is designed to support.

General Outcome 1
Students will listen, speak, read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences.

General Outcome 2
Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts.

General Outcome 3
Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information.

General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

General Outcome 5
Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community.

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General Outcome 1
Students will listen, speak, read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences.

1.1 *Discover and Explore*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
express ideas	1. question and reflect on their own and others' responses and interpretations and apply a variety of viewpoints to diverse situations or circumstances	1. summarize ideas, observations and opinions of themselves and others	1. speculate on the impact of various ideas, observations and opinions
consider others' ideas	2. seek information to add to current understanding	2. reformulate personal understanding and interpretations	2. discuss personal understanding and interpretations
experiment with language and forms	3. expand self-expression in oral, print and visual forms	3. expand use of oral, print and visual forms for self-expression	3. expand forms and perspectives of self-expression
express preferences	4. explore a variety of texts and genres by various writers, artists, storytellers and filmmakers	4. explain personal preferences for a variety of texts and genres by various writers, artists, storytellers and filmmakers	4. analyze personal preferences for a variety of texts and genres by various writers, artists, storytellers and filmmakers
set goals	5. demonstrate confidence and open-mindedness in personal language learning and use in a variety of formal and informal contexts	5. demonstrate self-direction and self-appraisal in language learning and use	5. demonstrate self-direction and self-appraisal in language learning and use and recognize themselves as lifelong learners

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General Outcome 1
Students will listen, speak, read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences.

1.2 *Clarify and Extend*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
develop understanding	1. examine connections between new and prior knowledge and ideas to clarify understanding for themselves and others	1. examine and establish connections between new and prior knowledge, ideas and experiences to clarify and enhance understanding	1. analyze connections between new and prior knowledge, ideas and experiences to clarify and enhance understanding
explain opinions	2. examine changing personal viewpoints	2. reflect on changing personal viewpoints and anticipate possible consequences	2. reflect critically on changing viewpoints and identify questions and ideas that merit further thought or reflection
combine ideas	3. develop a repertoire of organizational structures to clarify ideas and information and to bring order to their own thinking	3. expand their repertoire of organizational structures to clarify ideas and information and to bring order to their own thinking	3. use a variety of organizational structures to clarify ideas and information and to bring order to their own thinking
extend understanding	4. ask questions to interpret, evaluate and reflect on ideas and information	4. ask questions to explore divergent viewpoints	4. examine and interpret alternative perspectives and arrive at and articulate new understanding

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General Outcome 2
Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts.

2.1 *General Comprehension Strategies*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
prior knowledge	1. examine and explain connections between diverse experiences, prior knowledge and textual materials	1. analyze and justify connections between diverse experiences, prior knowledge and textual materials	1. integrate and synthesize diverse experiences, prior knowledge and a variety of materials
comprehension strategies	2. apply comprehension strategies appropriate to the type of text and purpose and enhance understanding by rereading and discussing relevant passages	2. apply and adjust strategies for comprehending a variety of texts and use a personal repertoire of strategies to monitor understanding	2. apply and adjust strategies for comprehending a variety of texts and determine the accuracy of understanding through paraphrasing and summarizing ideas
textual cues	3. use a variety of textual cues and prominent organizational patterns within texts to negotiate meaning	3. use a variety of textual cues and prominent organizational patterns within texts to construct meaning and interpret texts	3. use a variety of textual cues and prominent organizational patterns within texts to confirm meaning and interpret texts
cueing systems	4. use syntactic, semantic and graphophonic cueing systems to construct and confirm meaning and to interpret texts	4. use a variety of syntactic, semantic and graphophonic cueing systems to construct and confirm meaning and to interpret texts	4. use appropriate syntactic, semantic and graphophonic cueing systems to construct and confirm meaning and to interpret texts

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General Outcome 2
Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts.

2.2 *Respond to Texts*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
experience various texts	1. experience texts from a variety of genres and cultural traditions and explain interpretations of texts	1. experience texts from a variety of genres and cultural traditions and explain various interpretations of the same text	1. experience a range of texts from a variety of genres and cultural traditions and consider alternative interpretations and evaluations
connect self, texts and culture	2. compare the portrayals of people, events or perspectives in a variety of oral, print, visual and multimedia texts	2. compare the themes portrayed in a variety of oral, print, visual and multimedia texts	2. compare and understand the themes and values portrayed in a variety of oral, print, visual and multimedia texts
appreciate the artistry of texts	3. discuss how word choice and supporting details in oral, print, visual and multimedia texts affect purpose and audience	3. examine how word choice in oral, print, visual and multimedia texts alters and enhances mood or meaning and affects audience	3. analyze how word choice and visual images in oral, print, visual and multimedia texts create a composite meaning and effect

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General Outcome 2
Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts.

2.3 *Understand Forms and Techniques*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
forms and genres	1. identify various oral, print, visual and multimedia forms and genres	1. recognize unique characteristics of a variety of oral, print, visual and multimedia forms and genres	1. understand how choice of genre and form affects themes and audience response
techniques and elements	2. examine how plot, character and setting contribute to an overall theme and recognize the effectiveness of techniques used in oral, print, visual and multimedia texts	2. analyze how plot, character, setting and mood enhance meaning and evaluate the effectiveness of techniques used in oral, print, visual and multimedia texts	2. evaluate how elements and techniques are combined to achieve the artist's purpose and desired effect
vocabulary	3. recognize variations in language use in different situations and contexts	3. differentiate the proper use of slang, colloquialism and jargon	3. recognize the derivation of language and the role of culture and invention in word creation and usage; e.g., computer terminology—interface, mainframe, laptop
experiment with language	4. recognize ways in which creative uses of language influence thought, emotion and meaning	4. analyze ways in which creative uses of language develop a personal style	4. evaluate ways in which creative uses of language develop a personal style and evaluate the effectiveness of different techniques and devices
create original texts	5. create original texts, such as autobiographies, audio or video presentations and photo essays, to communicate and demonstrate understanding of forms and techniques	5. create original texts, such as multimedia presentations and personal compositions, to communicate and demonstrate understanding of forms and techniques	5. create original texts, such as editorials, plays and displays, to communicate and demonstrate understanding of forms and techniques

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General Outcome 3
Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information.

3.1 *Plan and Focus*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
personal knowledge and experience	1. examine their own experience and information and that of others to identify topic interests	1. use their own experience and that of others and reflect on the depth of knowledge and information needed to determine a focus for inquiry or research	1. examine personal understanding and knowledge to determine topic interests, identify gaps in knowledge and identify inquiry or research objectives
ask questions	2. develop focused inquiry or research questions to anticipate personal and audience needs on a topic	2. formulate and adjust inquiry or research questions to focus a topic and purpose	2. develop effective, focused inquiry or research questions
participate in group inquiry	3. collaborate to identify group knowledge base and determine inquiry or research topic focus	3. reflect on the depth of the group knowledge and information base to determine the information needed and the focus for inquiry or research	3. examine group understanding and knowledge to determine topic interests, identify gaps in knowledge and set inquiry or research objectives
create and follow a plan	4. prepare, use and adjust an inquiry or research plan as needed to access relevant information and ideas independently using a variety of methods	4. prepare, use and revise an inquiry or research plan and locate, access and record relevant information from a variety of sources	4. prepare, use and revise an inquiry or research plan and locate, access, evaluate and select relevant information independently from a variety of sources

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General Outcome 3
Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information.

3.2 *Select and Process*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
identify personal and peer knowledge	1. access, record and appraise personal and peer knowledge on an inquiry or research topic and initiate inquiry or research, using pre-established criteria	1. access, record and appraise personal and peer knowledge on an inquiry or research topic and focus the inquiry or research according to pre-established organization of the project	1. evaluate personal and peer knowledge of a topic and extend project design to generate additional knowledge and ideas
identify sources	2. identify a range of information sources to satisfy inquiry or research needs	2. identify a range of diverse information sources on an inquiry or research topic	2. identify a range of diverse forms of information sources to satisfy information needs
evaluate sources	3. evaluate the reliability and credibility of information sources	3. evaluate the quality of information sources and perspectives for a particular inquiry or research plan	3. evaluate potential information sources for breadth, depth and accessibility
access information	4. expand and use a variety of skills to access information and ideas from a variety of sources	4. use a combination of information retrieval knowledge and skills for particular topics and purposes	4. use information retrieval knowledge and skills to access and clarify information and use strategies to accomplish a task based on the time available and the depth of the topic
make sense of information	5. identify a variety of factors that affect meaning and use effective listening, reading and viewing techniques	5. identify and analyze a variety of factors that affect meaning; skim and scan for required information and use effective listening, reading and viewing techniques	5. identify and analyze a variety of factors that affect meaning and listen, read and view actively for themes, main ideas and supporting details of speakers and writers

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General Outcome 3
Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information.

3.3 *Organize, Record and Assess*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
organize information	1. organize and reorganize information and ideas in a variety of forms for different purposes	1. demonstrate flexibility and independence in organizing information and ideas, using a variety of strategies	1. organize information and ideas according to topic, purpose, form of presentation and final product
record information	2. record information and ideas, using a variety of organizational structures appropriate to purpose, and reference sources	2. record and summarize facts and information from a variety of sources and reference these sources	2. record and summarize information and perspectives from a variety of sources and presentation forms, and reference sources
evaluate information	3. evaluate collected information for completeness, relevance and currency and address information gaps	3. evaluate collected information for accuracy and effectiveness	3. evaluate collected information for completeness, accuracy, currency, relevance and effectiveness for particular forms, audiences and purposes
develop new understanding	4. integrate new information with prior knowledge to form new ideas	4. examine a variety of perspectives and consider alternative methods of reaching inquiry or research goals	4. evaluate the contribution of new information to personal knowledge base and reflect on the implications of inquiry or research methods and conclusions

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General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

4.1 *Generate and Focus*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
generate ideas	1. examine ideas from personal experiences and other sources to focus a topic	1. generate, evaluate and select ideas to achieve personal communication purposes	1. consider personal needs and topic, purpose and audience when generating, evaluating and selecting ideas
choose forms	2. use a variety of forms to match content, audience and purpose	2. use and adapt a variety of forms to match content, audience and purpose	2. use a variety of forms appropriate to identified content, audience and purpose
organize ideas	3. experiment with more than one organizational structure for their own oral, print, visual and multimedia texts	3. use organizational structures and techniques encountered in listening, reading and viewing experiences to enhance their own oral, print, visual and multimedia texts	3. organize oral, print, visual and multimedia texts to achieve specific purposes

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General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

4.2 *Enhance and Improve*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
appraise own and others' work	1. share their own work in a variety of forums and respond to their own work and the work of others, using pre-established criteria	1. share their own work in a variety of forums and appraise their own work and the work of others	1. share their own work in a variety of forums and respond to and appraise the effectiveness of their own work and that of others
revise content	2. revise work to enhance meaning and clarity	2. revise work to enhance effectiveness	2. recognize and apply a variety of communication styles appropriate for different purposes and use appropriate language in context
enhance legibility	3. use desktop publishing to adapt, combine and create documents	3. use a combination of technological and non-technological forms to create multimedia presentations and documents	3. use a combination of appropriate technological and non-technological forms to create and publish multimedia presentations
enhance artistry	4. analyze drafts and revise them to enhance the clarity and artistry of expression	4. analyze drafts and revise them to enhance the clarity and artistry of expression	4. enhance the clarity and artistry of expression
enhance presentation	5. prepare effectively organized compositions and presentations	5. use a variety of styles and forms and enhance description	5. use a variety of forms and styles for effective and creative expression of ideas and information

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General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

4.3 *Attend to Conventions*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
grammar and usage	1. edit for grammatical accuracy, sentence variety and word choice	1. proofread and edit for errors in language usage, grammar, content and form	1. adjust grammatical structures, word choice, content and form to enhance clarity and effect
accuracy of characters	2. know and apply conventions of character formations and monitor for correctness when editing and proofreading, using appropriate resources	2. know and apply conventions of character formations consistently when editing and proofreading	2. know and apply conventions of character formations consistently and accurately when editing and proofreading
writing conventions	3. know and apply writing conventions when editing and proofreading	3. know and apply writing conventions consistently when editing and proofreading	3. know and apply writing conventions consistently and accurately when editing and proofreading

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General Outcome 4
Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication.

4.4 *Present and Share*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
share ideas and information	1. plan and present sessions on particular topics, using a variety of techniques	1. plan and present or facilitate sessions on particular topics, using a variety of techniques	1. organize and conduct sessions on a specific topic, using various strategies
effective oral and visual communication	2. use voice and nonverbal cues to communicate meaning and organize communication for specific purposes, audiences and occasions	2. use voice and nonverbal cues to communicate meaning and for effect, and participate in personal and public communication	2. select and adapt oral and visual communication and presentation formats appropriate to specific topics, purposes, audiences and occasions
attentive listening and viewing	3. demonstrate critical listening and viewing behaviours and show respect for the presenter	3. demonstrate critical listening and viewing behaviours and show respect for the presenter	3. demonstrate critical understanding of presentation content and purpose

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General Outcome 5
Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community.

5.1 *Develop and Celebrate Community*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
share and compare responses	1. consider various ideas, evidence and viewpoints to expand understanding of texts, others and themselves	1. recognize differing responses and identify factors that shape understanding of texts, others and themselves	1. demonstrate the value of diverse ideas and viewpoints to deepen understanding of texts, others and themselves
relate texts to culture	2. recognize ways in which oral, print, visual and multimedia texts reflect cultural influences	2. recognize and discuss ways in which oral, print, visual and multimedia texts reflect cultural influences	2. analyze ways in which cultural experiences shape personal responses to oral, print, visual and multimedia texts
appreciate diversity	3. discuss ways in which texts convey and challenge individual and community values	3. discuss ways in which language and texts express and shape perceptions	3. discuss ways in which language and texts reflect and influence values and behaviours of people
celebrate special occasions	4. participate in using language to mark special events and occasions and recognize that language performs a symbolic and ceremonial function	4. use language and texts to celebrate personal and community occasions and accomplishments	4. use language and texts to celebrate important occasions and accomplishments and to extend and strengthen a sense of community

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General Outcome 5
Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community.

5.2 *Encourage, Support and Work with Others*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
cooperate with others	1. make and encourage contributions that advance a group's ideas or thinking	1. build and maintain cooperative relationships with others and engage in peer coaching	1. demonstrate flexibility in working with others, engage in self-initiated peer learning situations and recognize the merits and limitations of group work
work in groups	2. present group ideas and findings effectively	2. function effectively as group members and group leaders	2. understand differences between roles of a group leader and roles of a group member in a variety of situations and fulfill roles appropriately
use language to show respect	3. use communication that supports balanced and fair portrayals of people across races, cultures, genders, ages and abilities	3. recognize exploitative or discriminatory situations and explore and value diverse perspectives	3. contribute to creating and sustaining a positive learning community
evaluate group process	4. monitor and assess personal efforts and products within a group context	4. identify areas where others may require support and monitor their own ability to provide needed support	4. demonstrate accountability as individuals and as group members

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LANGUAGE ARTS

Specific Language Component

The Specific Language Component provides the linguistic elements of the Chinese language that students are expected to acquire in the various courses. The linguistic elements that are addressed include the sound–symbol systems, lexicon, grammatical elements, mechanical features and discourse features. The Specific Language Component also provides descriptors of proficiency for each course in the areas of listening, speaking, reading, writing, viewing and representing, as well as outcomes to support sociocultural/sociolinguistic competence and strategic learning.

The Specific Language Component is intended to outline the linguistic skills that students will need in order to achieve the outcomes in the General Language Component. The two components are interrelated and are intended to be delivered in an integrated manner.

Strategies in the Specific Language Component are grouped under three cluster headings—language learning strategies, language use strategies and general learning strategies. Each of the strands under these cluster headings deals with a specific category of strategy. Language learning and general learning strategies are categorized as cognitive, metacognitive and social/affective. The language use strategies are organized by communicative mode: interactive, interpretive, productive.

The strategies that students choose depend on the task they are engaged in as well as on other factors, such as their preferred learning style, personality, age, attitude and cultural background. Strategies that work well for one person may not be effective for another person, or may not be suitable in a different situation. For this reason it is not particularly useful to say that students should be aware of, or able to use, a specific strategy in a particular course. Consequently, the specific outcomes describe the students' knowledge of and ability to use general types of strategies. More specific strategies for each general category or type are included in the sample list of strategies below. The specific strategies provided in the sample list **are not prescriptive** but are provided as an illustration of how the general strategies in the specific outcomes might be developed.

Teachers need to know and be able to demonstrate a broad range of strategies from which students are then able to choose in order to communicate effectively. Strategies of all kinds are best taught in the context of learning activities where students can apply them immediately and then reflect on their use.

Sample List of Strategies

Language Learning Strategies

Cognitive

- listen attentively
- do actions to match words of a song, story or rhyme
- learn short rhymes or songs, incorporating new vocabulary or sentence patterns
- imitate sounds and intonation patterns
- memorize new words by repeating them silently or aloud, or by writing using correct stroke sequence
- seek the precise term to express meaning
- repeat words or phrases in the course of performing a language task
- make personal dictionaries
- experiment with various elements of the language
- use mental images to remember new information
- group together sets of things (vocabulary, structures) with similar characteristics
- identify similarities and differences between aspects of Chinese and your own language
- look for patterns and relationships
- use previously acquired knowledge to facilitate a learning task
- associate new words or expressions with familiar ones, either in Chinese or in your own language

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- find information by using reference materials like dictionaries, textbooks and grammars
- use available technological aids to support language learning; e.g., cassette recorders, computers
- use word maps, mind maps, diagrams, charts or other graphic representations to make information easier to understand and remember
- place new words or expressions in a context to make them easier to remember
- use induction to generate rules governing language use
- seek out opportunities outside of class to practise and observe
- perceive and note down unknown words and expressions, noting also their context and function
- use cues given by the teacher to determine the appropriate tone for a specific word

Metacognitive
- check copied writing for accuracy
- make choices about how to learn
- rehearse or role-play language
- decide in advance to attend to the learning task
- reflect on learning tasks with the guidance of the teacher
- make a plan in advance about how to approach a language learning task
- reflect on the listening, reading and writing process
- decide in advance to attend to specific aspects of input
- listen or read for key words
- evaluate your performance or comprehension at the end of a task
- keep a learning log
- experience various methods of language acquisition and identify one or more that are particularly useful personally
- be aware of the potential of learning through direct exposure to the language
- know how strategies may make it possible to cope with texts containing unknown elements
- identify problems that might hinder successful completion of a task, and seek solutions
- monitor your speech and writing to check for persistent errors
- be aware of your strengths and weaknesses, identify your needs and goals, and organize strategies and procedures accordingly

Social/Affective
- initiate or maintain interaction with others
- participate in shared reading experiences
- seek the assistance of others, such as teachers, parents or friends, to interpret a text
- reread familiar self-chosen texts to enhance understanding and enjoyment
- work cooperatively with peers in small groups
- understand that making mistakes is a natural part of language learning
- experiment with various forms of expression, noting their acceptance or nonacceptance by more experienced speakers
- participate actively in brainstorming and conferencing as prewriting and postwriting exercises
- use self-talk to feel competent to do the task
- be willing to take risks and to try unfamiliar tasks and approaches
- repeat new words and expressions that occur in your conversations, and make use of these new words and expressions as soon as appropriate
- reduce anxiety by using mental techniques such as positive self-talk or humour
- work with others to solve problems and to get feedback on tasks
- provide personal motivation by arranging your own rewards when successful

Language Use Strategies

Interactive
- use words from your first language to get your meaning across; e.g., use a literal translation of a phrase in the first language, use a first language word but pronounce it as in Chinese
- acknowledge being spoken to
- interpret and use a variety of nonverbal cues to communicate; e.g., mime, pointing, gestures, drawing pictures

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- indicate lack of understanding verbally or nonverbally; e.g., *Pardon, Sorry, I didn't understand*, raised eyebrows, blank look
- ask for clarification or repetition when you do not understand; e.g., *What do you mean by ...?, Could you say that again, please?*
- use other speakers' words in subsequent conversations
- assess feedback from a conversation partner to recognize when a message has not been understood; e.g., raised eyebrows, blank look
- start again, using a different tactic, when communication breaks down; e.g., *What I'm trying to say is ...*
- use a simple word similar to the concept to convey and invite correction; e.g., *fish* for *trout*
- invite others into the discussion
- ask for confirmation that a form used is correct; e.g., *Can you say that?*
- use a range of fillers, hesitation devices and gambits to sustain conversations; e.g., *Well, actually ..., Where was I?*
- use circumlocution to compensate for lack of vocabulary; e.g., *the thing you hang clothes on* for *hanger*
- repeat part of what someone has said to confirm mutual understanding; e.g., *So what you are saying is ...*
- summarize the point reached in a discussion to help focus the talk
- ask follow-up questions to check for understanding; e.g., *Am I making sense?*
- use suitable phrases to intervene in a discussion; e.g., *Speaking of ...*
- self-correct if errors lead to misunderstandings; e.g., *What I mean to say is ...*

Interpretive

- use gestures, intonation and visual supports to aid comprehension
- make connections between texts on the one hand and prior knowledge and personal experience on the other
- use illustrations to aid reading comprehension
- determine the purpose of listening
- focus on parts of a character, such as the radical, to guess the meaning of a word
- listen or look for key words
- listen selectively based on purpose
- make predictions about what you expect to hear or read based on prior knowledge and personal experience
- use knowledge of the sound–symbol system(s) to aid reading comprehension
- infer probable meanings of unknown words or expressions from contextual clues
- prepare questions or a guide to note down information found in a text
- use key content words or discourse markers to follow an extended text
- reread several times to understand complex ideas
- summarize information gathered
- assess your information needs before listening, viewing or reading
- use skimming and scanning to locate key information in texts

Productive

- mimic what the teacher says
- use nonverbal means to communicate
- copy what others say or write
- use words that are visible in the immediate environment
- use resources to increase vocabulary
- use familiar repetitive patterns from stories, songs, rhymes or media
- use illustrations to provide detail when producing your own texts
- use various techniques to explore ideas at the planning stage, such as brainstorming or keeping a notebook or log of ideas
- use knowledge of sentence patterns to form new sentences
- be aware of and use the steps of the writing process: prewriting (gathering ideas, planning the text, research, organizing the text), writing, revision (rereading, moving pieces of text, rewriting pieces of text), correction (grammar, spelling, punctuation), publication (reprinting, adding illustrations, binding)

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- use a variety of resources to correct texts; e.g., personal and commercial dictionaries, checklists, grammars
- take notes when reading or listening to assist in producing your own text
- revise and correct the final version of a text
- use circumlocution and definition to compensate for gaps in vocabulary
- apply grammar rules to improve accuracy at the correction stage
- compensate for avoiding difficult structures by rephrasing

General Learning Strategies

Cognitive
- classify objects and ideas according to their attributes; e.g., red objects and blue objects, animals that eat meat and animals that eat plants
- use models
- connect what is already known with what is being learned
- experiment with, and concentrate on, one thing at a time
- focus on and complete learning tasks
- record key words and concepts in abbreviated form (verbal, graphic or numerical) to assist with performance of a learning task
- use mental images to remember new information
- distinguish between fact and opinion when using a variety of sources of information
- formulate key questions to guide research
- make inferences, and identify and justify the evidence on which these inferences are based
- use word maps, mind maps, diagrams, charts or other graphic representations to make information easier to understand and remember
- seek information through a network of sources, including libraries, the World Wide Web, individuals and agencies
- use previously acquired knowledge or skills to assist with a new learning task

Metacognitive
- reflect on learning tasks with the guidance of the teacher
- choose from among learning options
- discover how your efforts can affect learning
- reflect upon your thinking processes and how you learn
- decide in advance to attend to the learning task
- divide an overall learning task into a number of subtasks
- make a plan in advance about how to approach a task
- identify your needs and interests
- manage your physical working environment
- keep a learning journal, such as a diary or a log
- develop criteria for evaluating your work
- work with others to monitor your learning
- take responsibility for planning, monitoring and evaluating learning experiences

Social/Affective
- watch others' actions and copy them
- seek help from others
- follow your natural curiosity and intrinsic motivation to learn
- participate in cooperative group learning tasks
- choose learning activities that enhance understanding and enjoyment
- be encouraged to try, even though mistakes might be made
- take part in group decision-making processes
- use support strategies to help peers persevere at learning tasks; e.g., offer encouragement, praise, ideas
- take part in group problem-solving processes
- use self-talk to feel competent to do the task
- be willing to take risks and to try unfamiliar tasks and approaches
- monitor your level of anxiety about learning tasks, and take measures to lower it if necessary; e.g., deep breathing, laughter
- use social interaction skills to enhance group learning activities

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General Outcome

The following general outcome outlines the key learnings that the Specific Language Component is designed to support.

General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.1 *Linguistic Elements*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
sound-symbol systems	1. apply knowledge of Hanyu pinyin accurately when encountering unfamiliar words in a variety of contexts*	1. apply tones and knowledge of Hanyu pinyin accurately when encountering unfamiliar words in a variety of contexts*	1. apply tones and knowledge of Hanyu pinyin accurately and effectively when encountering unfamiliar words in a variety of contexts*
lexicon	2. access needed vocabulary independently to enhance the precision of communication	2. use vocabulary and expressions correctly	2. use vocabulary and expressions correctly and appropriately
grammatical elements★	3. (see following pages)	3. (see following pages)	3. (see following pages)
mechanical features	4. use mechanical features correctly and effectively on a consistent basis	4. use mechanical features correctly and effectively on a consistent basis	4. use mechanical features correctly and effectively on a consistent basis
discourse features	5. explore and expand their repertoire of discourse features and experiment with using a variety of discourse features	5. use basic discourse features correctly in a variety of contexts	5. use a variety of discourse features correctly and select and use specific discourse features for effect

* Students who are familiar with zhuyin fuhao may also maintain and apply this skill.

★ For ease of use, the grammatical elements are presented separately in traditional form and in simplified form.

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grammatical elements – traditional form

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30

Students will be able to:

a. use, in modelled situations,[2] the following grammatical elements:

- 雙賓語動詞: 常用動詞
  1. 給, 拿, 找, 交, 還, 借, 賣, 寄, 退, 發, 要, 讓
  2. 借, 收, 買, 學, 拿
  3. 告訴, 回答, 通知, 教, 答應
- 成千上萬, 人山人海, 興高采烈
- 份, 列, 項, 匹, 趟, 顆, 扇, 顆, 朵, 袋
- 副詞:
  往往, 始終, 一時, 從來, 終於, 曾經, 直, 先後, 到處, 僅(僅), 一同, 一塊兒, 光, 挺, 相當, 比較, 極, 白(幹了)
  一 沒什麼, 就是說, 越來越, 好(不)容易, 哪知道, 誰知道
- 疑問代詞的虛指用法:
  我沒有幾個好朋友。
  我想吃點什麼。
  我們好像在哪兒見過。
- "有" 的特殊用法:
  1. 領有
  2. 存在
  3. 發生, 出現
- "的" 字詞組:
  我要綠的, 不要黃的。
  這是我的, 不是他的。
- 連動句:
  連續動作:
  他十點鐘就上床睡覺了。
  動作的目的:
  我們去商店買東西。
  動作方式
  動作結果
- 兼語句:
  表示使令意義的兼語:
  晚上我請你吃飯。
- 存現句:
  1. 表示存在
  牆上掛著一幅畫。
  2. 表示出現
  3. 表示消失
  教室裏少了一個人。
- 因果複句:
  由於…
  由於他不好好學習, 這次考試沒及格。

- 讓步複句: 就是…也…
  就是不想去, 也得去。
  就是沒辦成, 也要謝謝你。
- 偏正複句:
  因果: 因爲…所以…
  …所以 (因此, 因而)…
  …之所以…是因爲…
- 並列複句:
  既/又…又/也…
  及好看, 又實用.
  一方面…(另)一方面…
  吸煙一方面損害自己的健康,
  (另)一方面也損害別人的健康。
- 雙否定強調:
  沒有人不贊成。
  他不會不知道。
- 可能補語的否定形式:
  睡不著, 聽不懂, 看不清, 起不來
  Negative form of "得" potential complement
- 被動句:
  1. 有標誌的被動句:
  主語 + 被/給/叫/讓 + 動作 + others
  我的書讓小王借走了。
  2. 意義上的被動句:
  信寫好了。
  作業做完了。
  受到了批評
- 強調用法:
  1. 反問句
  這個句子不是學過了嗎?
  2. 連…也/都
  3. 疑問句 + 都
  我什麼都不喜歡。
- "把" 字句:
  主語 + 把 + 賓語 + 動詞 + 補語
  我把功課做完了。
  把書放在桌子上。
  把錢存進銀行。
- 總而言之, 一路順風, 無論如何
- 弄, 搞, 肯, 作爲, 具有, 引起, 趕 (趕)
  飛機, 來 (來一碗湯), 看 (你看怎麼辦, 上 (上千人)
- 副詞:
  到底, 果然, 千萬, 究竟, 恐怕, 儘管, 儘量, 大約, 差點兒, 倒 (你倒挺舒服), 準 (他準不在家)
- 人家, 某個人, 其中, 當時, 上 (學習上, 生活上), 方面 (學習方面, 生活方面)
- 此外, 而, 以及, 則, 總之, 從而, 不然, 然而

- 說不定, 不要緊, 不敢說, 不敢當, 不一定, 不得不, 不一會兒, 得了, 行了, 好了, 算了, 看樣子, 沒事兒, 有的是, 了不起
- 由, 自, 合, 順, 以, 於, 自從, 向, 對於, 替, 由於, 根據, 按(照)

(continued)

2. Modelled Situations: This term is used to describe learning situations where a model of specific linguistic elements is consistently provided and immediately available. Students in such situations will have an emerging awareness of the linguistic elements and will be able to apply them in very limited situations. Limited fluency and confidence characterize student language.

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grammatical elements – simplified form

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
Students will be able to:		
a. use, in modelled situations,[2] the following grammatical elements:		
– 双宾语动词: 常用动词: 1. 给, 送, 找, 交, 还, 借, 卖, 寄, 退, 发, 要, 让 2. 借, 收, 买, 学, 拿 3. 告诉, 回答, 通知, 教, 答应 – 成千上万, 人山人海, 兴高采烈 – 份, 列, 项, 匹, 趟, 顿, 届, 颗, 朵, 袋 – 副词: 往往, 始终, 一时, 从来, 终于, 曾经, 真, 先后, 到处, 仅(仅), 一同, 块儿, 光, 挺, 相当, 比较, 极, 已(经)了 一…什么, 就是说, 越来越, 好(不)容易, 哪知道, 谁知道 – 疑问代词的虚指用法: 我没有几个好朋友。 我想吃点什么。 我们好象在哪儿见过。 – "有"的特殊用法: 1. 领有 2. 存在 3. 发生, 出现 – "的"字词组: 我要绿的, 不要黄的。 这是我的, 不是他的。 – 连动句: 连续动作: 他十点钟就上床睡觉了。 动作的目的: 我们去商店买东西。 动作方式 动作结果 – 兼语句: 表示使令意义的兼语: 晚上我请你吃饭。 – 存现句: 1. 表示存在 墙上挂着一幅画。 2. 表示出现 3. 表示消失 教室里少了一个人。 – 因果复句: 由于… 由于他不好好学习, 这次考试没及格。	– 让步复句: 就是…也… 就是不想去, 也得去。 就是没办成, 也要谢谢你。 – 偏正复句: 因果: 因为…所以… …所以 (因此, 因而)… …之所以…是因为… – 并列复句: 既…又…/也… 及好看, 又实用. 一方面…(另)一方面… 吸烟一方面损害自己的健康, (另)一方面也损害别人的健康。 – 双否定强调: 没有人不赞成。 他不会不知道。 – 可能补语的否定形式: 睡不着, 听不懂, 看不清, 起不来 Negative form of "得" potential complement – 被动句: 1. 有标志的被动句: 主语 + 被/给/叫/让 + 动作 + others 我的书让小王借走了。 2. 意义上的被动句: 信写好了。 作业做完了。 受到了批评 – 强调用法: 1. 反问句 这个句子不是学过了吗? 2. 连…也/都 3. 疑问句 + 都 我什么都不喜欢。 – "把"字句: 主语 + 把 + 宾语 + 动词 + 补语 我把功课做完了。 把书放在桌子上。 把钱存进银行。 – 总而言之, 一路顺风, 无论如何 – 弄, 搞, 肯, 作为, 具有, 引起, 赶 (赶)飞机, 来 (来一碗汤), 看 (你看怎么办, 上 (上千人) – 副词: 到底, 果然, 千万, 究竟, 恐怕, 尽管, 尽量, 大约, 差点儿, 倒 (你倒挺舒服), 准 (他准不在家) – 人家, 某个人, 其中, 当时, 上 (学习上, 生活上), 方面 (学习方面, 生活方面) – 此外, 而, 以及, 则, 总之, 从而, 不然, 然而	– 说不定, 不要紧, 不敢说, 不敢当, 不一定, 不得不, 不一会儿, 得了/行了/好了/算了, 看样子, 没事儿, 有的是, 了不起 – 由, 自, 沿, 顺, 以, 于, 自从, 向, 对于, 替, 由于, 根据, 按(照)

(continued)

2. Modelled Situations: This term is used to describe learning situations where a model of specific linguistic elements is consistently provided and immediately available. Students in such situations will have an emerging awareness of the linguistic elements and will be able to apply them in very limited situations. Limited fluency and confidence characterize student language.

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	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
grammatical elements – traditional form	*Students will be able to:* b. use, in structured situations,[3] the following grammatical elements:..... – 可帶上謂詞組 (小句) 的最常用動詞: 知道、說、覺得、想、看見、看、聽、聽見、以爲、聽說、怕、希望、認爲 – 非…不可 學語言、非下苦功不可。 – 推論關係: 既…就… 既然…就… – 條件關係: 如果 (假如、假若、要是)…就… 要有…才… 只要…就… 除非…才… – 假設複句: 要是 (如果)…就… 要是下雨, 我們就不去了。 如果不下雨, 我就來。 – 條件複句: 只有…才… 只有多練習, 才能學好。 只要…就… 只要天氣好, 我們就去。 – 轉折複句: 儘管…但是/可是… 儘管她不懂中文, 但是她很喜歡中國。	– 雙賓語動詞: 常用動詞: 1. 給、送、找、交、還、借、賣、寄、退、發、要、讓 2. 借、收、買、學、拿 3. 告訴、回答、通知、教、答應 – 成千上萬, 人山人海, 興高采烈 – 因果複句: 由於… 由於他不好好學習, 這次考試沒及格。 – 副詞: 往往、始終、一時、從來、終於、曾經、直、先後、到處、僅(僅)、一同、一塊兒、光、挺、相當、比較、極、白(幹了) – 沒什麼, 就是說, 越來越, 好(不)容易, 哪知道、誰知道 – 轉折關係: 卻 – 承接關係: 然後, 於是 – 讓步關係: 雖然 (固然, 儘管)…但是… 即使 (哪怕、縱然)…也… – 取捨關係: 與其…不如 (寧可)… 寧可…也不 (絕不)… – 固定格式: 由…組成 到…爲止 要是 (如果)…的話 – 副詞: 並(不/沒)、決(不/沒)、毫不、親自、親手、漸漸、仍/仍然/仍舊、一下子、卻	– 甚、搞、肯、作爲、具有、引起、趕 (趕飛機、來一碗湯)、看 (你看怎麼辦)、上 (上千人) – 副詞: 到底、果然、千萬、究竟、恐怕、儘管、儘量、大約、差點兒、倒 (你倒挺舒服)、準 (他準不在家) – 人家、某個人、其中、當時、上 (學習上、生活上)、方面 (學習方面、生活方面) – 此外、而、以及、則、總之、從而、不然、然而 – 讓步關係: 雖然 (固然、儘管)…但是… 即使 (哪怕、縱然)…也… – 取捨關係: 與其…不如 (寧可)… 寧可…也不 (決不)… – 固定格式: 由…組成 到…爲止 要是 (如果)…的話 – 副詞: 並 (不/沒)、決 (不/沒)、毫不、親自、親手、漸漸、仍/仍然/仍舊、一下子、卻

(continued)

3. Structured Situations: This term is used to describe learning situations where a familiar context for the use of specific linguistic elements is provided and students are guided in the use of these linguistic elements. Students in such situations will have increased awareness and emerging control of the linguistic elements and will be able to apply them in familiar contexts with teacher guidance. Student language is characterized by increasing fluency and confidence.

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grammatical elements – simplified form

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
Students will be able to:		
b. use, in structured situations,[3] the following grammatical elements:		
– 可带主谓词组(小句)的最常用动词: 知道、说、觉得、想、看见、看、听、听见、以为、听说、怕、希望、认为 – 非…不可 学语言,非下苦功不可。 – 推论关系: 既…就… 既然…就… – 条件关系: 如果(假如、假若、要是)…就… 要有…才… 只要…就… 除非…才… – 假设复句: 要是(如果)…就… 要是下雨,我们就不去了。 如果不下雨,我就来。 – 条件复句: 只有…才… 只有多练习,才能学好。 只要…就… 只要天气好,我们就去。 – 转折复句: 尽管…但是/可是… 尽管她不懂中文,但是她很喜欢中国。	– 双宾语动词:常用动词: 1. 给、送、找、交、还、借、卖、寄、退、发、要、让 2. 借、收、买、学、拿 3. 告诉、回答、通知、教、答应 – 成千上万、人山人海、兴高采烈 – 因果复句: 由于… 由于他不好好学习,这次考试没及格。 – 副词: 往往、始终、一时、从来、终于、曾经、直、先后、到处、仅(仅)、一同、一块儿、光、挺、相当、比较、极、白(干了) – 没什么、就是说、越来越、好(不)容易、哪知道、谁知道 – 转折关系:却 – 承接关系:然后、于是 – 让步关系: 虽然(固然、尽管)…但是… 即使(哪怕、纵然)…也… – 取舍关系: 与其…不如(宁可)… 宁可…也不(绝不)… – 固定格式: 由…组成 到…为止 要是(如果)…的话 – 副词: 并(不/没)、决(不/没)、毫不、亲自、亲手、渐渐、仍/仍然/仍旧、一下子、却	– 弄、搞、肯、作为、具有、引起、赶(赶飞机、来一碗汤)、看(你看怎么办)、上(上千人) – 副词: 到底、果然、千万、究竟、恐怕、尽管、尽量、大约、差点儿、倒(你倒挺舒服)、准(他准不在家) – 人家、某个人、其中、当时、上(学习上、生活上)、方面(学习方面、生活方面) – 此外、而、以及、则、总之、从而、不然、然而 – 让步关系: 虽然(固然、尽管)…但是… 即使(哪怕、纵然)…也… – 取舍关系: 与其…不如(宁可)… 宁可…也不(决不)… – 固定格式: 由…组成 到…为止 要是(如果)…的话 – 副词: 并(不/没)、决(不/没)、毫不、亲自、亲手、渐渐、仍/仍然/仍旧、一下子、却

(continued)

3. Structured Situations: This term is used to describe learning situations where a familiar context for the use of specific linguistic elements is provided and students are guided in the use of these linguistic elements. Students in such situations will have increased awareness and emerging control of the linguistic elements and will be able to apply them in familiar contexts with teacher guidance. Student language is characterized by increasing fluency and confidence.

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grammatical elements – traditional form

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30

Students will be able to:

c. use, independently and consistently,[4] the following grammatical elements: .....

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
– 疑問句: 1. 肯定與否定相疊 忙不忙, 去不去 2. 用"多" 這條路多長? 你學中文多就了? – 比較句: 比的用法 A比B + adj. A 比 B + adj. 一點 A 比 B + adj. 得多/很多 A 不比/不如 B + adj. A 比 B + v. 得 + adj. A 不比 B + v. 得 + adj. A 和 B 一樣 + adj. A 比較 + adj. A 沒有 B + adj. – 故意, 顯然, 近(一, 兩)年, 糊裡糊塗, 馬馬虎虎 – 詞的重疊 (duplicated words): AA: 吃吃看 ABAB: 複習複習 AABB: 冷冷清清 AAB: 游游泳, 聽聽音樂 – 緊縮複句: 越…越…: 她越長越漂亮。 不…不…: 你不去不行。 – 在…之前/之後/之上/之下/之中, 在…方面, 在…以前, 從…以後, 在/當…的時候, 爲…而…	– 份, 列, 項, 匹, 趟, 頓, 届, 顆, 朵, 袋 – 疑問代詞的虛指用法: 我沒有幾個好朋友。 我想吃點什麼。 我們好像在哪兒見過。 – 有的特殊用法: 1. 領有 2. 存在 3. 發生, 出現 – "的"字詞組: 我要綠的, 不要黃的。 這是我的, 不是他的。 – 連動句: 連續動作: 他十點鐘就上床睡覺了。 動作的目的: 我們去商店買東西。 動作方式 動作結果 – 兼語句: 表示使令意義的兼語: 晚上我請你吃飯。 – 存現句: 1. 表示存在 牆上掛著一幅畫。 2. 表示出現 3. 表示消失 教室裏少了一個人。 – 推論關係: 既…就… 既然…就… – 條件關係: 如果(假如, 假若, 要是)…就… 要有…才… 只要…就… 除非…才… – 假設複句: 要是(如果)…就… 要是下雨, 我們就不去了。 如果不下雨, 我就來。 – 條件複句: 只有…才… 有多練習, 才能學好。 只要…就… 要天氣好, 我們就去。	– 讓步複句: 就是…也… 就是不想去, 也得去。 就是沒幫成, 也要謝謝你。 – 偏正複句: 因果: 因爲…所以… …所以(因此, 因而)… …之所以…是因爲… – 並列複句: 既/又…又/也… 及好看, 又實用。 一方面…(另)一方面… 吸煙一方面損害自己的健康, (另)一方面也損害別人的健康。 – 雙否定強調: 沒有人不贊成。 他不會不知道。 – 可能補語的否定形式: 睡不著, 聽不懂, 看不清, 起不來 Negative form of "得" potential complement – 被動句:篆 1. 有標誌的被動句:篆 主語 + 被/給/叫/讓 + 動作 + others 我的書讓小王借走了。 2. 意義上的被動句: 信寫好了。 作業做完了。 受到了批評。 – 強調用法: 1. 反問句 這個句子不是學過了嗎? 2. 連…也/都 3. 疑問句 + 都 我什麼都不喜歡。 – "把"字句: 主語 + 把 + 賓語 + 動詞 + 補語 我把功課做完了。 把書放在桌子上。 把錢存進銀行。 – 總而言之, 一路順風, 無論如何 – 轉折關係: 卻 – 承接關係: 然後, 於是

(continued)

4. Independently and Consistently: This term is used to describe learning situations where students use specific linguistic elements consistently in a variety of contexts with limited or no teacher guidance. Fluency and confidence characterize student language.

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grammatical elements – simplified form

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30

Students will be able to:

c. use, independently and consistently,[4] the following grammatical elements:

Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
– 疑问句: 1. 肯定与否定相叠 忙不忙、去不去 2. 用"多" 这条路多长? 你学中文多就了? – 比较句: 比的用法 A比B + adj. A 比 B + adj. 一点 A 比 B + adj. 得多/很多 A 不比/不如 B + adj. A 比 B + v. 得 + adj. A 不比 B + v. 得 + adj. A 和 B 一样 + adj. A 比较 + adj. A 没有 B + adj. – 故意、最终、近(一、两)年、胡里胡涂、马马虎虎 – 词的重叠 (duplicated words): AA: 吃吃看 ABAB: 复习复习 AABB: 冷冷清清 AAB: 游游泳、听听音乐 – 紧缩复句: 越…越…: 她越长越漂亮. 不…不…: 你不去不行. – 在…之前/之后/之上/之下/之中/在…方面/在…以前、从…以后、在…当…的时候、为…而…	– 份、列、项、匹、趟、顿、届、颗、朵、袋 – 疑问代词的虚指用法: 我没有几个好朋友。 我想吃点什么。 我们好象在哪儿见过。 – 有的特殊用法: 1. 领有 2. 存在 3. 发生、出现 – "的"字词组: 我要绿的、不要黄的。 这是我的、不是他的。 – 连动句: 连续动作: 他十点钟就上床睡觉了。 动作的目的: 我们去商店买东西。 动作方式 动作结果 – 兼语句: 表示使令意义的兼语: 晚上我请你吃饭。 – 存现句: 1. 表示存在 墙上挂着一幅画。 2. 表示出现 3. 表示消失 教室里少了一个人。 – 推论关系: 既…就… 既然…就… – 条件关系: 如果(假如、假若、要是)…就… 要有…才… 只要…就… 除非…才… – 假设复句: 要是(如果)…就… 要是下雨、我们就不去了。 如果不下雨、我就来。 – 条件复句: 只有…才… 有多练习、才能学好。 只要…就… 要天气好、我们就去。	– 让步复句: 就是…也… 就是不想去、也得去。 就是没办成、也要谢谢你。 – 偏正复句: 因果: 因为…所以… …所以 (因此、因而)… …之所以…是因为… – 并列复句: 既/又…又/也… 又好看、又实用. 一方面…(另)一方面… 吸烟一方面损害自己的健康、(另)一方面也损害别人的健康。 – 双否定强调: 没有人不赞成。 他不会不知道。 – 可能补语的否定形式: 睡不着、听不懂、看不清、起不来 Negative form of "得" potential complement – 被动句: 1. 有标志的被动句: 主语 + 被/给/叫/让 + 动作 + others 我的书让小王借走了。 2. 意义上的被动句: 信写好了。 作业做完了。 受到了批评。 – 强调用法: 1. 反问句 这个句子不是学过了吗? 2. 连…也/都 3. 疑问句 + 都 我什么都不喜欢。 – "把"字句: 主语 + 把 + 宾语 + 动词 + 补语 我把功课做完了。 把书放在桌子上。 把钱存进银行。 – 总而言之、一路顺风、无论如何 – 转折关系: 却 – 承接关系: 然后、于是

(continued)

4. Independently and Consistently: This term is used to describe learning situations where students use specific linguistic elements consistently in a variety of contexts with limited or no teacher guidance. Fluency and confidence characterize student language.

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6.1 *Linguistic Elements (continued)*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
grammatical elements – traditional form		– 轉折複句: 儘管…但是/可是… 管她不懂中文,但是她很喜歡中國。 – 可帶主謂詞組(小句)的最常用動詞: 知道、說、覺得、想、看見、看、聽、聽見、以爲、聽說、怕、希望、認爲 – 非…不可 學語言,非下苦功不可。	– 雙賓語動詞:常用動詞: 1. 給、交、找、欠、還、借、賣、寄、退、發、要、讓 2. 借、收、買、學、拿 3. 告訴、回答、通知、教、答應 – 成千上萬、人山人海、興高采烈 – 因果複句: 由於… 於他不好好學習,這次考試沒及格。 – 副詞: 往往、始終、一時、從來、終於、曾經、直、先後、到處、僅(僅)、一同、一塊兒、光、挺、相當、比較、極、白(幹了) – 沒什麼、就是說、越來越、好(不)容易、哪知道、誰知道

Note: Grammatical elements that students are able to use independently and consistently are to be maintained for the duration of the students' bilingual programming.

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6.1 *Linguistic Elements (continued)*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
grammatical elements – simplified form		– 转折复句: 尽管...但是 可是... 管她不懂中文,但是她很喜欢中国。 – 可带主谓词组(小句)的最常用动词: 知道、说、觉得、想、看见、看、听、听见、以为、听说、怕、希望、认为 – 非...不可 学语言,非下苦功不可。	– 双宾语动词:常用动词: 1. 给、送、找、交、还、借、卖、寄、退、发、要、让 2. 借、收、买、学、拿 3. 告诉、问答、通知、教、答应 – 成千上万、人山人海、兴高采烈 – 因果复句: 由于... 于他不好好学习,这次考试没及格。 – 副词: 往往、始终、一时、从来、终于、曾经、直、先后、到处、仅(仅)、一同、一块儿、光、挺、相当、比较、极、白(干了) – 没什么、就是说、越来越、好(不)容易、哪知道、谁知道

Note: Grammatical elements that students are able to use independently and consistently are to be maintained for the duration of the students' bilingual programming.

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.2 *Language Competence*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
listening	1. understand the main points and supporting details of lengthy oral presentations on familiar topics	1. understand the main points and relevant supporting details of oral presentations on familiar and some unfamiliar topics	1. understand the main points and relevant supporting details of oral presentations on familiar and unfamiliar topics
speaking	2. produce main points and supporting details on familiar topics in a variety of structured and unstructured situations	2. present and support cohesive thoughts and ideas on familiar and some unfamiliar topics	2. present and support, spontaneously, cohesive thoughts and ideas on familiar and unfamiliar topics
reading	3. understand the main points and supporting details of lengthy written texts on familiar topics	3. understand the main points and supporting details of lengthy written texts on familiar and unfamiliar topics	3. understand the main points and supporting details of lengthy written texts on familiar and unfamiliar topics
writing	4. produce, in writing, main points and supporting ideas on familiar topics in a variety of structured and unstructured situations	4. produce a lengthy written text, including main and supporting ideas on familiar and some unfamiliar topics	4. develop and present in writing, cohesively and spontaneously, main and supporting ideas on familiar and unfamiliar topics
viewing	5. view and understand complex representations of ideas, events and/or information	5. view and understand a variety of complex representations of ideas, events and/or information	5. view and understand a variety of complex representations of ideas, events and/or information
representing	6. create effective representations of ideas, events and information	6. create cohesive and effective representations of ideas, events and information	6. create cohesive and effective representations of a variety of ideas, events and information

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.3 *Sociocultural/Sociolinguistic Elements*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
register	1. identify differences in register between spoken and written texts	1. adjust language to suit audience and purpose	1. use the appropriate level of formality with a variety of people in a variety of contexts
idiomatic expressions	2. interpret unfamiliar idiomatic expressions in a variety of contexts	2. explore and interpret idiomatic expressions in popular, contemporary culture	2. interpret unfamiliar idiomatic expressions and use learned idiomatic expressions appropriately in a variety of situations
variations in language	3. identify some common regional or other variations in language	3. experiment with some variations in language	3. adapt to some variations in language
social conventions	4. use politeness conventions in a variety of contexts; e.g., use suitable language to engage the attention of listeners when beginning to speak	4. use politeness conventions in a variety of contexts; e.g., interrupt politely in a conversation	4. interpret and use a variety of social conventions in a variety of situations
nonverbal communication	5. use nonverbal communication techniques in a variety of contexts	5. use nonverbal communication techniques in a variety of contexts	5. interpret and use a variety of nonverbal communication techniques in a variety of contexts

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.4 *Language Learning Strategies*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
cognitive	1. select and use appropriate cognitive strategies to enhance language learning in a variety of situations; e.g., place new words or expressions in a context to make them easier to remember	1. use appropriate cognitive strategies effectively to enhance language learning in a variety of situations; e.g., use induction to generate rules governing language use, seek opportunities outside of class to practise and observe	1. use appropriate cognitive strategies effectively to enhance language learning in a variety of contexts; e.g., perceive and note down unknown words and expressions, noting also their context and function
metacognitive	2. select and use appropriate metacognitive strategies to enhance language learning in a variety of situations; e.g., identify problems that might hinder successful completion of a task, and seek solutions	2. use appropriate metacognitive strategies effectively to enhance language learning in a variety of situations; e.g., monitor their own speech and writing to check for persistent errors	2. use appropriate metacognitive strategies effectively to enhance language learning in a variety of contexts; e.g., be aware of their own strengths and weaknesses, identify their own needs and goals, and organize their strategies and procedures accordingly
social/affective	3. select and use appropriate social and affective strategies to enhance language learning in a variety of situations; e.g., reduce anxiety by using mental techniques such as positive self-talk or humour	3. use appropriate social and affective strategies effectively to enhance language learning in a variety of situations; e.g., work with others to solve problems and to get feedback on tasks	3. use appropriate social and affective strategies effectively to enhance language learning in a variety of contexts; e.g., provide personal motivation by arranging rewards for themselves when successful

Further examples of language learning strategies are available on pages 25 and 26.

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.5 *Language Use Strategies*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
interactive	1. select and use appropriate interactive strategies in a variety of situations; e.g., summarize the point reached in a discussion to help focus the talk	1. use appropriate interactive strategies effectively in a variety of situations; e.g., ask follow-up questions to check for understanding	1. use appropriate interactive strategies effectively in a variety of contexts; e.g., use suitable phrases to intervene in a discussion, self-correct if errors lead to misunderstandings
interpretive	2. select and use appropriate interpretive strategies in a variety of situations; e.g., summarize information gathered	2. use appropriate interpretive strategies effectively in a variety of situations; e.g., assess their own information needs before listening, viewing or reading	2. use appropriate interpretive strategies effectively in a variety of contexts; e.g., use skimming and scanning to locate key information in texts
productive	3. select and use appropriate productive strategies in a variety of situations; e.g., revise and correct the final version of a text, apply grammar rules to improve accuracy at the correction stage	3. use appropriate productive strategies effectively in a variety of situations; e.g., use circumlocution and definition to compensate for gaps in vocabulary	3. use appropriate productive strategies effectively in a variety of contexts; e.g., compensate for avoiding difficult structures by rephrasing

Further examples of language use strategies are available on pages 26 to 28.

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General Outcome 6
Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning.

6.6 *General Learning Strategies*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
cognitive	1. select and use appropriate cognitive strategies to enhance general learning in a variety of situations; e.g., use word maps, mind maps, diagrams, charts or other graphic representations to make information easier to understand and remember	1. select and use appropriate cognitive strategies to enhance general learning in a variety of situations; e.g., seek information through a network of sources, including libraries, the World Wide Web, individuals and agencies	1. use appropriate cognitive strategies effectively to enhance general learning in a variety of contexts; e.g., use previously acquired knowledge or skills to assist with a new learning task
metacognitive	2. select and use appropriate metacognitive strategies to enhance general learning in a variety of situations; e.g., develop criteria for evaluating their own work	2. select and use appropriate metacognitive strategies to enhance general learning in a variety of situations; e.g., reflect upon their thinking processes and how they learn	2. use appropriate metacognitive strategies effectively to enhance general learning in a variety of contexts; e.g., take responsibility for planning, monitoring and evaluating learning experiences
social/affective	3. select and use appropriate social and affective strategies to enhance general learning in a variety of situations; e.g., use self-talk to make themselves feel competent to do the task	3. select and use appropriate social and affective strategies to enhance general learning in a variety of situations; e.g., monitor their level of anxiety about learning tasks and take measures to lower it if necessary	3. use appropriate social and affective strategies effectively to enhance general learning in a variety of contexts; e.g., use social interaction skills to enhance group learning activities

Further examples of general learning strategies are available on page 28.

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CULTURE

The Culture section supports the development, in each student, of a positive self-concept, a strong self-identity as a multilingual/multicultural learner and a positive identification with the Chinese language and culture. This section provides opportunities for the exploration of Chinese culture from the perspectives of history, contemporary life, diversity and change. It promotes the development of a sense of community, an understanding of similarities and differences among people, and an appreciation for personal contributions to society. It is also designed to help students develop an understanding of global interrelatedness and interdependence, as well as cultural sensitivity, and to support their preparation for effective participation in the global community, marketplace and workplace.

The Culture section is intended to be integrated with language learning, as well as learnings related to other subject areas, and is an essential part of daily activities in Chinese bilingual programming.

General Outcome

The following general outcome outlines the key learnings that the Culture section is designed to support.

General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

Note: Additional outcomes that include cultural content may be found elsewhere in this program of studies, including specific outcomes under General Outcome 5, as well as under cluster heading 6.3 Sociocultural/Sociolinguistic Elements.

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General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

7.1 *Self-identity*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
understanding self-identity	1. understand that self-identity and self-concept change	1. understand that self-identity and self-concept can change over time and in various contexts	1. articulate, express and celebrate their own unique identity
developing positive self-identity	2. identify areas of personal strength and possible future opportunities and plan for future self-development and growth	2. explore the alignment of personal strengths with possible career and other future opportunities	2. identify personal strengths in planning for a career or further studies
valuing Chinese language and culture	3. participate in, and contribute to, community-based activities in which knowledge and skills related to the Chinese language/culture will be applied	3. participate in, and contribute to, intercultural interactions with members of the Chinese culture; e.g., exchanges, intervisitations and pen-pal activities	3. choose to engage in activities that will promote their own lifelong cultural development
valuing bilingualism/ multiculturalism	4. participate in, and contribute to, community-based activities in which bilingual/multicultural knowledge and skills will be applied	4. participate in, and contribute to, intercultural interactions; e.g., exchanges, intervisitations and pen-pal activities	4. choose to engage in activities that will promote their own lifelong bilingual/ multicultural development

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General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

7.2 *Chinese Culture*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
historical elements	1. recognize and appreciate the influence and contributions of major historical events, historical figures and developments of Chinese culture	1. compare and contrast interpretations and perspectives of the influence and contributions of major historical events, historical figures and developments of Chinese culture	1. identify and analyze how historical experiences of Chinese culture have shaped the contemporary Chinese language and cultural groups in local, Canadian and international contexts
contemporary elements	2. recognize and appreciate the influence and contributions of major contemporary events, contemporary figures and developments of Chinese culture	2. compare and contrast interpretations and perspectives of the influence and contributions of major contemporary events, contemporary figures and developments of Chinese culture	2. identify and analyze the impact of contemporary influences on the Chinese language and cultural groups in local, Canadian and international contexts
diversity	3. compare and contrast perspectives on diversity at the national level	3. compare and contrast perspectives on diversity at the international level	3. identify and analyze how historical and current diversity of Chinese culture has shaped the contemporary Chinese language and culture in local, national and international contexts
change	4. examine historical influences that have affected Chinese culture	4. examine contemporary influences that have affected Chinese culture	4. identify and analyze the significance of historical and contemporary changes of Chinese culture on the rest of the world

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General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

7.3 *Building Community*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
positive group membership	1. demonstrate respect for the rights and opinions of others and understand that social issues are complex	1. demonstrate respect for the rights and opinions of others, focusing on current cultural issues in the media	1. demonstrate understanding that various political and economic systems impose, to varying degrees, different values on the rights and opinions of others
valuing diversity	2. identify and analyze how Canada's response to diversity has changed, compare how different nations have responded to diversity and identify the benefits of a pluralistic approach	2. analyze and understand the significance of diversity in shaping contemporary and future opportunities for growth	2. participate in various individual, group, school and community activities that celebrate diversity and promote intercultural understanding
valuing similarity	3. identify and explain how common human experiences and needs are reflected in the culture, social structure and day-to-day patterns of behaviour in Canada	3. identify and explain how common human experiences and needs are reflected in the culture, social structure and day-to-day patterns of behaviour in different countries of the world	3. identify, explain and analyze how common human experiences and needs are reflected in the culture, social structures and political systems of various countries in the world
contributing to community	4. participate in various school and community events to promote intercultural understanding	4. participate in various school, community and Canadian events to promote intercultural understanding	4. participate in, and contribute to, individual, group, school and/or community activities, using their knowledge and skills related to Chinese culture

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General Outcome 7
Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society.

7.4 *Global Citizenship*

	Chinese Language Arts 10	Chinese Language Arts 20	Chinese Language Arts 30
	Students will be able to:		
responsible citizenship	1. identify and analyze a citizen's roles and responsibilities in interrelated local, national and international contexts	1. examine how various forms of citizen action have affected public policy with regard to cultural diversity in Canada	1. participate in group decision making and problem solving in ways that demonstrate concern for others and understanding of responsibilities as citizens
interdependence	2. identify and analyze the variety of ways in which peoples and nations are linked in an interrelated global system	2. explore and analyze how global links and interdependency affect one's role as a citizen	2. examine the local and global consequences of individual and collective decision making
intercultural skills	3. examine attitudes and values that contribute to cross-cultural understanding	3. identify how intercultural and multicultural organizations have influenced global citizenship	3. demonstrate cultural sensitivity and awareness of cultural diversity in everyday situations through appropriate behaviour and language
future opportunities	4. explore career fields in which bilingual and multicultural knowledge, skills and attitudes can be applied	4. examine goals and action plans for further development of skills, knowledge and attitudes required for effective participation in the global workplace and marketplace	4. apply bilingual and multicultural knowledge and skills in specific activities that will promote skill development and opportunities for future participation in the global workplace

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FRANÇAIS 10–20–30

This French language course is intended specifically for francophone students receiving instruction in French according to section 5 of the *School Act* and section 23 of the *Canadian Charter of Rights and Freedoms*.

The course has a double focus: the development of a functional use of the French language in personal, social and academic settings, as well as the development and enhancement of one's identity and pride as a Francophone living in Alberta. The language skills—listening/viewing, speaking, reading and writing—are developed at every grade level to enhance progressively the students' ability to communicate effectively in the French language. The study of grammar and vocabulary acquisition are pursued to ensure clear and appropriate communication. Emphasis is placed on the planning, monitoring and evaluation strategies that students must access to successfully complete a communication project.

Specific curricular information is contained in the following document prepared by French Language Services of Alberta Education: *Français, Programme d'études de français langue première* (M–12).

For more information, contact French Language Services Branch at 780–427–2940.

FRENCH LANGUAGE ARTS 10–20–30

This French language course is intended specifically for students registered in French immersion programs.

This course aims to develop a functional use of the French language in both social and academic settings. As in any language program, basic language skills—listening/viewing, speaking, reading and writing—are developed at every grade level to enhance progressively the students' ability to communicate effectively in the French language. The study of grammar and vocabulary acquisition are pursued to ensure clear and appropriate communication. A great deal of emphasis is placed on the planning, monitoring and evaluation strategies that students need to use to successfully complete a communication project.

Specific curricular information is contained in the following document prepared by French Language Services of Alberta Education: *French Language Arts, Programme d'études de français langue seconde – immersion* (M–12).

For more information, contact French Language Services Branch at 780–427–2940.

SCIENCE

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The Science Vision Statement, and all the science programs of study, are available for viewing and downloading at http://www.education.gov.ab.ca/k_12/curriculum/bySubject/science/default.asp.

SCIENCE 20–30

The *Interim 1995 Science 20–30 (Senior High) Program of Studies* currently in use is located on the Alberta Education Web site at http://www.education.gov.ab.ca/k_12/curriculum/bySubject/science/sci2030.pdf and is available for purchase from the Learning Resources Centre. The Science 20 portion of this program of studies has been withdrawn and replaced with the new 2006 Science 20 Program of Studies. Mandatory implementation of the new Science 20 Program of Studies is September 2006.

The new *Science 20 Program of Studies*, 2006 is located on the Alberta Education Web site at http://www.education.gov.ab.ca/k_12/curriculum/bySubject/science/sci20.pdf.

The *Science 30 Resource Development Draft*, August 2002 is located on the Alberta Education Web site at http://www.education.gov.ab.ca/k_12/curriculum/bySubject/science/sci30out.pdf. Mandatory implementation of the new Science 30 Program of Studies will be in the 2007–2008 school year.

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SCIENCE 20

PROGRAM RATIONALE AND PHILOSOPHY

Science programs provide opportunities for students to develop the knowledge, skills and attitudes they need to become productive and responsible members of society. The programs also allow students to explore interests and prepare for further education and careers. Students graduating from Alberta schools require the scientific and related technological knowledge and skills that will enable them to understand and interpret their world. They also need to develop attitudes that will motivate them to use their knowledge and skills in a responsible manner.

To become scientifically literate, students need to develop a knowledge of science and its relationship to technologies and society. They also need to develop the broad-based skills required to identify and analyze problems; to explore and test solutions; and to seek, interpret and evaluate information. To ensure relevance to students as well as to societal needs, a science program must present science in a meaningful context—providing opportunities for students to explore the process of science, its applications and implications, and to examine related technological problems and issues. By doing so, students become aware of the role of science in responding to social and cultural change and in meeting needs for a sustainable environment, economy and society.

Program Vision

The secondary science program is guided by the vision that all students, regardless of gender or cultural background, are given the opportunity to develop scientific literacy. The goal of scientific literacy is to develop in students the science-related knowledge, skills and attitudes that they need to solve problems and make decisions and, at the same time, to help students become lifelong learners who maintain their sense of wonder about the world around them.

Diverse learning experiences within the science program provide students with opportunities to explore, analyze and appreciate the interrelationships among science, technology, society and the environment and to develop understandings that will affect their personal lives, their careers and their futures.

Goals

The following goals for Canadian science education, developed in the *Common Curriculum Framework of Science Learning Outcomes, K to 12: Pan-Canadian Protocol for Collaboration on School Curriculum* (1997), are addressed through the Alberta science program. Science education will:

- encourage students at all grade levels to develop a critical sense of wonder and curiosity about scientific and technological endeavours

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- enable students to use science and technology to acquire new knowledge and solve problems so that they may improve the quality of their lives and the lives of others
- prepare students to critically address science-related societal, economic, ethical and environmental issues
- provide students with a foundation in science that creates opportunities for them to pursue progressively higher levels of study, prepares them for science-related occupations and engages them in science-related hobbies appropriate to their interests and abilities
- develop in students of varying aptitudes and interests a knowledge of the wide spectrum of careers related to science, technology and the environment.

Aboriginal Perspectives

Courses in the senior high school sciences program incorporate Aboriginal perspectives in order to develop, in all students, an appreciation of the cultural diversity and achievements of First Nations, Métis and Inuit (FNMI) peoples. These courses are designed to:

- acknowledge the contributions of Aboriginal peoples to understandings of the natural world
- support relational thinking by integrating learning from various disciplines of science
- develop the concept of humankind's connectivity to the natural world and foster an appreciation for the importance of caring for the environment
- foster the development of positive attitudes by providing experiences that encourage all students to feel confident about their ability to succeed in science.

Information and Communication Technology (ICT)

Selected curriculum outcomes from Alberta Education's Information and Communication Technology (ICT) Program of Studies are infused throughout the 20-level and 30-level sciences so that students will develop a broad perspective on the nature of technology, learn how to use and apply a variety of technologies, and consider the impact of ICT on individuals and society. The infusion of ICT outcomes supports and reinforces the understandings and abilities that students are expected to develop within Foundation 3 (the interrelationships among science, technology and society) and Foundation 4 (Skills) of these courses. Effective, efficient and ethical application of ICT outcomes contributes to the program vision.

Infusion of ICT outcomes provides learning opportunities for students to:

- understand the nature of technology and apply terminology appropriately
- use equipment carefully and share limited ICT resources
- use technology in an ethical manner, including respecting the ownership of information and digital resources and citing electronic sources
- use technology safely, including applying ergonomic principles and appropriate safety procedures
- use the Internet safely, including protecting personal information and avoiding contact with strangers
- use technology appropriately, including following communication etiquette and respecting the privacy of others.

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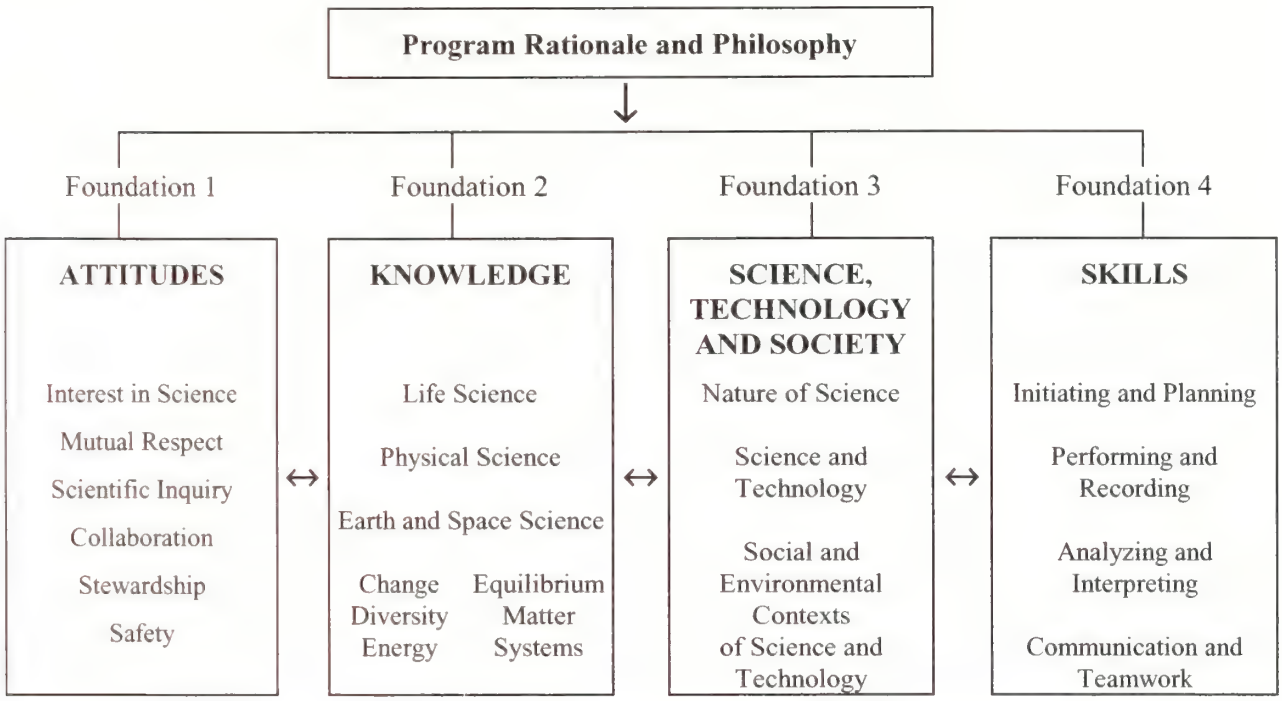
PROGRAM FOUNDATIONS

To support the development of scientific literacy, a science program must provide learning experiences that address critical aspects of science and its application. These foundations provide a general direction for the program and identify the major components of its structure.



Foundation 1
Attitudes—*Students will be encouraged to* develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society and the environment.

Foundation 2
Knowledge—*Students will* construct knowledge and understandings of concepts in life science, physical science and Earth and space science, and apply these understandings to interpret, integrate and extend their knowledge.

Foundation 3
Science, Technology and Society (STS)—*Students will* develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

Foundation 4
Skills—*Students will* develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively and for making informed decisions.

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Foundation 1: Attitudes

Foundation 1 is concerned with the generalized aspects of behaviour that are commonly referred to as attitudes. Attitude outcomes are of a different form than outcomes for skills and knowledge: they are exhibited in a different way, and they are rooted more deeply in the experiences that students bring to school. Attitude development is a lifelong process that involves the home, the school, the community and society at large. Attitudes are best shown not by the events of a particular moment but by the pattern of behaviours over time. Development of positive attitudes plays an important role in student growth by interacting with students' intellectual development and by creating a readiness for responsible application of what is learned.

Interest in Science

Students will be encouraged to develop enthusiasm and continuing interest in the study of science.

Mutual Respect

Students will be encouraged to appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds.

Scientific Inquiry

Students will be encouraged to develop attitudes that support active inquiry, problem solving and decision making.

Collaboration

Students will be encouraged to develop attitudes that support collaborative activity.

Stewardship

Students will be encouraged to develop responsibility in the application of science and technology in relation to society and the natural environment.

Safety

Students will be encouraged to demonstrate a concern for safety in science and technology contexts.

Foundation 2: Knowledge

Foundation 2 focuses on the subject matter of science, including the laws, theories, models, concepts and principles that are essential to an understanding of each science area. For organizational purposes this foundation is framed using widely accepted science disciplines.

Life Science

Life science deals with the growth and interactions of life forms within their environments in ways that reflect their uniqueness, diversity, genetic continuity and changing nature. Life science includes such fields of study as ecosystems, biological diversity, organisms, cells, biochemistry, genetic engineering and biotechnology.

Physical Science

Physical science, which encompasses chemistry and physics, deals with matter, energy and forces. Matter has structure, and there are interactions among its components. Energy links matter to gravitational, electromagnetic and nuclear forces in the universe. Physical science also addresses the conservation laws of mass and energy, momentum and charge.

Earth and Space Science

Earth and space science brings global and universal perspectives to student knowledge. The planet Earth exhibits form, structure and patterns of change, as does the surrounding solar system and the physical universe beyond it. Earth and space science includes such fields of study as geology, meteorology and astronomy.

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Themes are the major ideas of science and technology that transcend discipline boundaries and demonstrate unity among the natural sciences. Six themes have been identified for the senior high school sciences program.

Change
Students will develop an understanding of:

How all natural entities are modified over time, how the direction of change might be predicted and, in some instances, how change can be controlled.

Diversity
Students will develop an understanding of:

The array of living and nonliving forms of matter and the procedures used to understand, classify and distinguish these forms of matter on the basis of recurring patterns.

Energy
Students will develop an understanding of:

The capacity for doing work that drives much of what takes place in the universe through its variety of interconvertible forms.

Equilibrium
Students will develop an understanding of:

The state in which opposing forces or processes balance in a static or dynamic way.

Matter
Students will develop an understanding of:

The constituent parts, and the variety of states, of the material in the physical world.

Systems
Students will develop an understanding of:

The interrelated groups of things or events that can be defined by their boundaries and, in some instances, by their inputs and outputs.

Foundation 3: Science, Technology and Society (STS)

Foundation 3 is concerned with understanding the scope and character of science, its connections to technology and the social context in which it is developed. The following is a brief introduction to the major ideas underlying this component of the program.

Nature of Science

Science provides an ordered way of learning about the nature of things, based on observation and evidence. Through science, we explore our environment, gather knowledge and develop ideas that help us interpret and explain what we see. Scientific activity provides a conceptual and theoretical base that is used in predicting, interpreting and explaining natural and technological phenomena. Science is driven by a combination of specific knowledge, theory, observation and experimentation. Science-based ideas are continually being tested, modified and improved as new knowledge and explanations supersede existing ones.

Science and Technology

Technology is concerned with solving practical problems that arise from human needs. Historically, the development of technology has been strongly linked to the development of science, with each making contributions to the other. While there are important relationships and interdependencies, there are also important differences. Whereas the focus of science is on the development and verification of knowledge, the focus of technology is on the development of solutions, involving devices and systems that meet a given need within the constraints of a problem. The test of scientific knowledge is that it helps us explain, interpret and predict; the test of technology is that it works—it enables us to achieve a given purpose.

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Social and Environmental Contexts

The history of science shows that scientific development takes place within a social context. Many examples can be used to show that cultural and intellectual traditions have influenced the focus and methodologies of science, and that science in turn has influenced the wider world of ideas.

Today, research is often driven by societal and environmental needs and issues. As technological solutions have emerged from previous research, many of the new technologies have given rise to complex social and environmental issues. Increasingly, these issues are becoming part of the political agenda. The potential of science to inform and empower decision making by individuals, communities and society is central to scientific literacy in a democratic society.

Foundation 4: Skills

Foundation 4 is concerned with the skills that students develop in answering questions, solving problems and making decisions. While these skills are not unique to science, they play an important role in the development of scientific understandings and in the application of science and technology to new situations. Four broad skill areas are outlined in the secondary science program. Each skill area is developed at each level with increasing scope and complexity of application.

Initiating and Planning

These are the skills of questioning, identifying problems and developing preliminary ideas and plans.

Performing and Recording

These are the skills of carrying out a plan of action that involve gathering evidence by observation and, in most cases, manipulating materials and equipment.

Analyzing and Interpreting

These are the skills of examining information and evidence; of processing and presenting data so that they can be interpreted; and of interpreting, evaluating and applying the results.

Communication and Teamwork

In science, as in other areas, communication skills are essential at every stage during which ideas are being developed, tested, interpreted, debated and agreed upon. Teamwork skills are also important, as the development and application of science ideas are collaborative processes both in society and in the classroom.

PROGRAM ORGANIZATION

Attitude Outcomes

A listing of Attitude outcomes is included at the beginning of each of the 20-level and 30-level courses in the senior high school sciences program. These specific outcomes are to be developed throughout the particular course in conjunction with the specific outcomes for Knowledge, STS and Skills listed within each unit of study.

Units of Study

In the senior high school sciences program, four units of study are outlined for each course. Each unit in the 20-level and 30-level courses includes the following components.

Themes

Themes are the major ideas of science that transcend topics of study.

Overview

The overview introduces the contents of the unit and suggests an approach to unit development.

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Links to Mathematics

This section lists topics from mathematics programs of study that are related to the science content of the unit.

Focusing Questions

These questions frame a context for introducing the unit and suggest a focus for investigative activities and application of ideas by students.

Key Concepts

Key concepts identify major ideas to be developed in the unit. Some of the concepts may be addressed in additional units of the same course, as well as in other courses. The intended scope of treatment of these concepts is indicated by the outcomes.

Outcomes

Two levels of outcomes are provided in each unit:

- General Outcomes: These are the major outcomes in the unit that students are to demonstrate over the course of their learning.
- Specific Outcomes: These are detailed outcomes that delineate the scope of each general outcome and the unit. Specific outcomes for Knowledge; Science, Technology and Society (STS); and Skills are identified.

The outcomes are numbered for the purpose of referencing. This numbering is not intended to imply a fixed instructional sequence.

Examples

Many of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

STS Emphases

The specific outcomes for Science, Technology and Society (STS) and Skills for each general outcome in a unit include one of the following emphases:

- Nature of Science
- Science and Technology
- Social and Environmental Contexts

Most general outcomes also have one of these as a secondary emphasis. The STS emphases provide opportunities for students to develop related concepts and skills as outlined on pages 8 to 10.

Additional Links

Links to the STS emphasis frameworks (pages 8 to 10) are shown in **boldface** and (in parentheses) after specific outcomes for STS and after specific outcomes or examples for Skills. Links to the Division 4 ICT curriculum (pages 11 to 13) are shown in **boldface** and [in brackets] after some of the specific outcomes and examples for STS and Skills. The STS and ICT links indicate that the concept or skill from the STS emphasis framework or the Division 4 ICT outcome has been addressed in the specific outcome or example.

Note: The listing of STS and ICT links is not exhaustive; other links may exist.

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Framework for Developing a Nature of Science Emphasis (Grades 10–12)

The following concepts and skills are developed through this STS emphasis.

Concepts (focus on how scientific knowledge is developed)

Students will develop an understanding that:

- the goal of science is knowledge about the natural world **(NS1)**
- scientific knowledge and theories develop through hypotheses, the collection of evidence, investigation and the ability to provide explanations **(NS2)**
- scientific knowledge results from peer review and replication of the research of others **(NS3)**
- scientific knowledge is subject to change as new evidence becomes apparent and as laws and theories are tested and subsequently revised, reinforced, rejected or replaced **(NS4)**
- the process of scientific investigation includes **(NS5)**:
  - identifying the theoretical basis of the investigation **(NS5a)**
  - clearly defining and delimiting research questions or ideas to be tested **(NS5b)**
  - designing the investigation **(NS5c)**
  - evaluating and selecting means to collect and record evidence **(NS5d)**
  - carrying out the investigation **(NS5e)**
  - analyzing the evidence and providing explanations based upon scientific theories and concepts **(NS5f)**
- scientific paradigms are conceptual inventions that help organize, interpret and explain findings **(NS6)**
  - Concepts, models and theories are often used in interpreting and explaining observations and in predicting future observations **(NS6a)**
  - Conventions of mathematics, nomenclature and notation provide a basis for organizing and communicating scientific theory, relationships and concepts; e.g., chemical symbols **(NS6b)**
  - Scientific language is precise, and specific terms may be used in each field of study **(NS6c)**
- scientific inquiry is limited to certain questions **(NS7)**

Skills (focus on scientific inquiry)

Initiating and Planning **(IP–NS)**

Students will:

- identify, define and delimit questions to investigate **(IP–NS1)**
- design an experiment, identifying and controlling major variables **(IP–NS2)**
- state a prediction and a hypothesis based on available evidence or background information or on a theory **(IP–NS3)**
- evaluate and select appropriate procedures, including appropriate sampling procedures, and instruments for collecting evidence and information **(IP–NS4)**

Performing and Recording **(PR–NS)**

Students will:

- research, integrate and synthesize information from various print and electronic sources regarding a scientific question **(PR–NS1)**
- select and use appropriate instruments for collecting data effectively, safely and accurately **(PR–NS2)**
- carry out procedures, controlling the major variables, and adapt or extend procedures where required **(PR–NS3)**
- compile and organize findings and data by hand or computer, using appropriate formats such as diagrams, flow charts, tables and graphs **(PR–NS4)**
- apply Workplace Hazardous Materials Information System (WHMIS) standards to handle and dispose of materials **(PR–NS5)**

Analyzing and Interpreting **(AI–NS)**

Students will:

- apply appropriate terminology, classification systems and nomenclature used in the sciences **(AI–NS1)**
- interpret patterns and trends in data and predict the value of a variable by interpolating or extrapolating from graphical data or from a line of best fit **(AI–NS2)**
- estimate and calculate the value of variables, compare theoretical and empirical values, and account for discrepancies **(AI–NS3)**
- identify limitations of data or measurements; explain sources of error; and evaluate the relevance, reliability and adequacy of data and data collection methods **(AI–NS4)**
- identify new questions or problems that arise from what was learned **(AI–NS5)**
- state a conclusion, based on data obtained from investigations, and explain how evidence gathered supports or refutes a hypothesis, prediction or theory **(AI–NS6)**

Communication and Teamwork **(CT–NS)**

Students will:

- work cooperatively with team members to develop and carry out investigations **(CT–NS1)**
- select and use appropriate numeric, symbolic, graphical or linguistic modes of representation to communicate findings and conclusions **(CT–NS2)**
- evaluate individual and group processes used in planning and carrying out investigative tasks **(CT–NS3)**

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Framework for Developing a Science and Technology Emphasis (Grades 10–12)

The following concepts and skills are developed through this STS emphasis.

Concepts (focus on the interrelationship of science and technology)

Students will develop an understanding that:

- the goal of technology is to provide solutions to practical problems **(ST1)**
- technological development may involve creation of prototypes and testing, as well as application of knowledge from related scientific and interdisciplinary fields **(ST2)**
- technological problems often require multiple solutions that involve different designs, materials and processes and that have both intended and unintended consequences **(ST3)**
- scientific knowledge may lead to the development of new technologies, and new technologies may lead to or facilitate scientific discovery **(ST4)**
- the process for technological development includes **(ST5)**:
  - defining and delimiting clearly the problems to be solved and establishing criteria to assess the technological solution **(ST5a)**
  - identifying the constraints, the benefits and the drawbacks **(ST5b)**
  - developing designs and prototypes **(ST5c)**
  - testing and evaluating designs and prototypes on the basis of established criteria **(ST5d)**
- the products of technology are devices, systems and processes that meet given needs; however, these products cannot solve all problems **(ST6)**
- the appropriateness, risks and benefits of technologies need to be assessed for each potential application from a variety of perspectives, including sustainability **(ST7)**

Skills (focus on problem solving)

Initiating and Planning **(IP–ST)**

Students will:

- identify questions to investigate arising from practical problems **(IP–ST1)**
- propose and assess alternative solutions to a given practical problem, select one and develop a plan **(IP–ST2)**
- evaluate and select appropriate procedures and instruments for collecting data and information and for solving problems **(IP–ST3)**

Performing and Recording **(PR–ST)**

Students will:

- research, integrate and synthesize information from various print and electronic sources relevant to a practical problem **(PR–ST1)**
- construct and test a prototype device or system and troubleshoot problems as they arise **(PR–ST2)**
- select and use tools, apparatus and materials safely **(PR–ST3)**

Analyzing and Interpreting **(AI–ST)**

Students will:

- evaluate designs and prototypes on the basis of self-developed criteria; e.g., function, reliability, cost, safety, efficient use of materials, impact on the environment **(AI–ST1)**
- analyze alternative solutions to a given problem, identify potential strengths and weaknesses of each and recommend an approach to solving the problem, based on findings **(AI–ST2)**
- solve problems by selecting appropriate technology to perform manipulations and calculations **(AI–ST3)**
- identify new questions and problems that arise from what was learned and evaluate potential applications of findings **(AI–ST4)**

Communication and Teamwork **(CT–ST)**

Students will:

- work cooperatively with team members to test a prototype device or system and troubleshoot problems as they arise **(CT–ST1)**
- select and use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate findings and conclusions **(CT–ST2)**
- evaluate individual and group processes used in planning and carrying out problem-solving tasks **(CT–ST3)**

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Framework for Developing a Social and Environmental Contexts Emphasis (Grades 10–12)

The following concepts and skills are developed through this STS emphasis.

Concepts (focus on issues related to the application of science and technology)

Students will develop an understanding that:

- science and technology are developed to meet societal needs and expand human capability **(SEC1)**
- science and technology have influenced, and been influenced by, historical development and societal needs **(SEC2)**
- science and technology have both intended and unintended consequences for humans and the environment **(SEC3)**
- society provides direction for scientific and technological development **(SEC4)**
  - Canadian society supports scientific research and technological development to facilitate a sustainable society, economy and environment **(SEC4a)**
  - Decisions regarding the application of scientific and technological development involve a variety of perspectives, including social, cultural, environmental, ethical and economic considerations **(SEC4b)**
  - Society supports scientific and technological development by recognizing accomplishments, publishing and disseminating results and providing financial support **(SEC4c)**
- scientific and technological activity may arise from, and give rise to, such personal and social values as accuracy, honesty, perseverance, tolerance, open-mindedness, critical-mindedness, creativity and curiosity **(SEC5)**
- science and technology provide opportunities for a diversity of careers based on post-secondary studies, for the pursuit of hobbies and interests, and for lifelong learning **(SEC6)**

Skills (focus on applying science to inform decision-making processes)

Initiating and Planning **(IP–SEC)**

Students will:

- identify questions to investigate that arise from issues related to the application of science and technology **(IP–SEC1)**
- plan complex searches for information, using a wide variety of electronic and print sources **(IP–SEC2)**
- assess and develop appropriate processes for collecting relevant data and information about science-and-technology-related issues **(IP–SEC3)**

Performing and Recording **(PR–SEC)**

Students will:

- research, integrate and synthesize information from various print and electronic sources relevant to a given question, problem or issue **(PR–SEC1)**
- select information and gather evidence from appropriate sources and evaluate search strategies **(PR–SEC2)**

Analyzing and Interpreting **(AI–SEC)**

Students will:

- apply given criteria for evaluating evidence and assess the authority, reliability, scientific accuracy and validity of sources of information **(AI–SEC1)**
- apply a variety of perspectives in assessing the risks and benefits of scientific and technological developments **(AI–SEC2)**
- assess potential decisions and recommend the best one, based on findings **(AI–SEC3)**
- identify new questions that arise and evaluate from a variety of perspectives potential implications of findings **(AI–SEC4)**

Communication and Teamwork **(CT–SEC)**

Students will:

- work cooperatively with team members to investigate a science-and-technology-related issue **(CT–SEC1)**
- communicate in a persuasive and an engaging manner, using appropriate multimedia forms, to further understand a complex science-and-technology-related issue **(CT–SEC2)**
- make clear and logical arguments to defend a given decision on an issue, based on findings **(CT–SEC3)**
- evaluate individual and group processes used in investigating an issue and in evaluating alternative decisions **(CT–SEC4)**

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Division 4 ICT Outcomes

Category: Communicating, Inquiring, Decision Making and Problem Solving

General Outcomes	Specific Outcomes
C1 Students will access, use and communicate information from a variety of technologies.	C1 4.1 plan and perform complex searches, using more than one electronic source 4.2 select information from appropriate sources, including primary and secondary sources 4.3 evaluate and explain the advantages and disadvantages of various search strategies 4.4 communicate in a persuasive and engaging manner, through appropriate forms, such as speeches, letters, reports and multimedia presentations, applying information technologies for context, audience and purpose that extend and communicate understanding of complex issues
C2 Students will seek alternative viewpoints, using information technologies.	C2 4.1 consult a wide variety of sources that reflect varied viewpoints on particular topics 4.2 evaluate the validity of gathered viewpoints against other sources
C3 Students will critically assess information accessed through the use of a variety of technologies.	C3 4.1 assess the authority, reliability and validity of electronically accessed information 4.2 demonstrate discriminatory selection of electronically accessed information that is relevant to a particular topic
C4 Students will use organizational processes and tools to manage inquiry.	C4 4.1 use calendars, time management or project management software to assist in conducting an inquiry
C5 Students will use technology to aid collaboration during inquiry.	C5 4.1 use telecommunications to pose critical questions to experts 4.2 participate in a variety of electronic group formats
C6 Students will use technology to investigate and/or solve problems.	C6 4.1 investigate and solve problems of prediction, calculation and inference 4.2 investigate and solve problems of organization and manipulation of information 4.3 manipulate data by using charting and graphing technologies in order to test inferences and probabilities 4.4 generate new understandings of problematic situations by using some form of technology to facilitate the process 4.5 evaluate the appropriateness of the technology used to investigate or solve a problem
C7 Students will use electronic research techniques to construct personal knowledge and meaning.	C7 4.1 use appropriate strategies to locate information to meet personal needs 4.2 analyze and synthesize information to determine patterns and links among ideas 4.3 use appropriate presentation software to demonstrate personal understandings

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Category: Foundational Operations, Knowledge and Concepts

General Outcomes	Specific Outcomes
F1 **Students will demonstrate an understanding of the nature of technology.**	**F1** 4.1 assess the strengths and weaknesses of computer simulations in relation to real-world problems 4.2 solve mathematical and scientific problems by selecting appropriate technology to perform calculations and experiments 4.3 apply terminology appropriate to technology in all forms of communication 4.4 demonstrate an understanding of the general concepts of computer programming and the algorithms that enable technological devices to perform operations and solve problems
F2 **Students will understand the role of technology as it applies to self, work and society.**	**F2** 4.1 use technology outside formal classroom settings 4.2 analyze how technological innovations and creativity affect the economy 4.3 demonstrate an understanding of new and emerging communication systems 4.4 evaluate potential for emerging technologies 4.5 demonstrate conservation measures when using technology 4.6 demonstrate an understanding of the basic principles and issues of e-commerce, including such topics as security and privacy, marketing, and implications for governments, businesses and consumers alike 4.7 use current, reliable information sources from around the world 4.8 analyze and assess the impact of technology on the global community
F3 **Students will demonstrate a moral and ethical approach to the use of technology.**	**F3** 4.1 demonstrate an understanding of how changes in technology can benefit or harm society 4.2 record relevant data for acknowledging sources of information, and cite sources correctly 4.3 respect ownership and integrity of information
F4 **Students will become discerning consumers of mass media and electronic information.**	**F4** 4.1 discriminate between style and content in a presentation 4.2 evaluate the influence and results of digital manipulation on our perceptions 4.3 identify and analyze a variety of factors that affect the authenticity of information derived from mass media and electronic communication
F5 **Students will practise the concepts of ergonomics and safety when using technology.**	**F5** 4.1 assess new physical environments with respect to ergonomics 4.2 identify safety regulations specific to the technology being used
F6 **Students will demonstrate a basic understanding of the operating skills required in a variety of technologies.**	**F6** 4.1 continue to demonstrate the outcomes addressed within the previous divisions. Students interested in pursuing advanced study in such areas as electronics, programming, computer-aided design and drafting (CADD), robotics and other industrial applications of technology will find opportunities in Career and Technology Studies (CTS) courses

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Division 4 ICT Outcomes (continued)

Category: Processes for Productivity

General Outcomes	Specific Outcomes
P1 **Students will compose, revise and edit text.**	P1 4.1 continue to demonstrate the outcomes achieved in prior grades and course subjects
P2 **Students will organize and manipulate data.**	P2 4.1 manipulate and present data through the selection of appropriate tools, such as scientific instrumentation, calculators, databases and/or spreadsheets
P3 **Students will communicate through multimedia.**	P3 4.1 select and use, independently, multimedia capabilities for presentations in various subject areas 4.2 support communication with appropriate images, sounds and music 4.3 apply general principles of graphic layout and design to a document in process
P4 **Students will integrate various applications.**	P4 4.1 integrate a variety of visual and audio information into a document to create a message targeted for a specific audience 4.2 apply principles of graphic design to enhance meaning and audience appeal 4.3 use integrated software effectively and efficiently to reproduce work that incorporates data, graphics and text
P5 **Students will navigate and create hyperlinked resources.**	P5 4.1 create multiple-link documents appropriate to the content of a particular topic 4.2 post multiple-link pages on the World Wide Web or on a local or wide area network
P6 **Students will use communication technology to interact with others.**	P6 4.1 select and use the appropriate technologies to communicate effectively with a targeted audience

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SCIENCE 20

Science 20 consists of four units of study:

A. Chemical Changes
B. Changes in Motion
C. The Changing Earth
D. Changes in Living Systems

Attitude Outcomes

Students will be encouraged to develop positive attitudes that support the responsible acquisition and application of knowledge related to science and technology. The following attitude outcomes are to be developed throughout Science 20, in conjunction with the specific outcomes for Knowledge, STS and Skills in each unit.

Interest in Science

Students will be encouraged to:
show interest in science-related questions and issues and confidently pursue personal interests and career possibilities within science-related fields; *e.g.:*

- *research the answers to questions they generate*
- *explore and use a variety of methods and resources to increase their knowledge and skills*
- *be critical and constructive when considering new theories and techniques*
- *use scientific vocabulary and principles in everyday discussions*
- *recognize the usefulness of being skilled in mathematics and problem solving*
- *be interested in science and technology topics not directly related to their formal studies*
- *recognize the importance of making connections among various science disciplines*
- *maintain interest in pursuing further studies in science*
- *explore where further science- and technology-related studies and careers can be pursued*
- *recognize that many careers require science- and technology-related knowledge and skills.*

Mutual Respect

Students will be encouraged to:
appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds; *e.g.:*

- *use a multi-perspective approach, considering scientific, technological, economic, cultural, political and environmental factors when formulating conclusions, solving problems or making decisions on an STS issue*
- *research carefully and discuss openly ethical dilemmas associated with the applications of science and technology*
- *explore personal perspectives, attitudes and beliefs toward scientific and technological advancements*
- *recognize the contribution of science and technology to the progress of civilizations*
- *show support for the development of technologies and science as they relate to human needs*
- *recognize that Western approaches to science are not the only ways of viewing the universe*
- *recognize the research contributions of both men and women*
- *recognize the research contributions of Canadians.*

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Scientific Inquiry

Students will be encouraged to:
seek and apply evidence when evaluating alternative approaches to investigations, problems and issues; *e.g.:*

- *consider the social and cultural contexts in which a theory developed*
- *appreciate how scientific problem solving and the development of new technologies are related*
- *insist on evidence before accepting a new idea or a new explanation*
- *assess, critically, their opinion of the value of science and its applications*
- *question arguments in which evidence, explanations or positions do not reflect the diversity of perspectives that exist*
- *criticize arguments that are based on faulty, incomplete or misleading use of numbers*
- *recognize the importance of reviewing the basic assumptions from which a line of inquiry has arisen*
- *insist that the critical assumptions behind any line of reasoning be made explicit so that the validity of the position taken can be judged*
- *evaluate inferences and conclusions, being cognizant of the many variables involved in experimentation*
- *ask questions and conduct research to ensure understanding*
- *expend the effort and time needed to make valid inferences*
- *seek new models, explanations and theories when confronted with discrepant events.*

Collaboration

Students will be encouraged to:
work collaboratively in planning and carrying out investigations and in generating and evaluating ideas; *e.g.:*

- *provide the same attention and energy to the group's product as they would to a personal assignment*
- *be attentive when others speak, seek the point of view of others, and consider a multitude of perspectives*
- *use appropriate communication technology to elicit feedback from others*
- *participate in a variety of electronic group formats.*

Stewardship

Students will be encouraged to:
demonstrate sensitivity and responsibility in pursuing a balance between the needs of humans and a sustainable environment; *e.g.:*

- *assume part of the collective responsibility for the impact of humans on the environment*
- *participate in civic activities related to the preservation and judicious use of the environment and its resources*
- *encourage their peers or members of their community to participate in a project related to sustainability*
- *consider all perspectives when addressing issues, weighing scientific, technological and ecological factors*
- *discuss both the positive and negative effects on human beings and society of environmental changes caused by nature and by humans*
- *participate in the social and political systems that influence environmental policy in their community*
- *promote actions that are not injurious to the environment*

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- *make personal decisions based on a feeling of responsibility toward less privileged parts of the global community and toward future generations*
- *be critical-minded regarding the short- and long-term consequences of sustainability.*

Safety

Students will be encouraged to:
show concern for safety in planning, carrying out and reviewing activities, referring to the Workplace Hazardous Materials Information System (WHMIS) and consumer product modelling information; *e.g.:*

- *consider safety a positive limiting factor in scientific and technological endeavours*
- *read the labels on materials before using them, interpret the WHMIS symbols and consult a reference document if safety symbols are not understood*
- *manipulate materials carefully, being cognizant of the risks and consequences of their actions*
- *assume responsibility for the safety of all those who share a common working environment, by cleaning up after an activity and disposing of materials according to safety guidelines*
- *seek assistance immediately for any first-aid concerns, such as cuts, burns or unusual reactions*
- *keep the work station uncluttered, ensuring that only appropriate laboratory materials are present*
- *criticize a procedure, a design or materials that are not safe or that could have a negative impact on the environment*
- *use safety and waste disposal as criteria for evaluating an experiment*
- *write safety and waste-disposal precautions into a laboratory procedure.*

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Unit A: Chemical Changes

Themes: Matter, Change and Energy

Overview: Chemical changes involve a change in energy. In order for students to understand how numerous useful materials are produced, they need to develop an understanding of concentrations of aqueous solutions, oxidation-reduction (redox) processes and the characteristics of hydrocarbons. Economically important industries in Alberta and other parts of Canada are based upon the application of chemical principles.

This unit builds on:

- Science 10, Unit A: Energy and Matter in Chemical Change

This unit provides a background for:

- Science 30, Unit B: Chemistry and the Environment

Unit A will require approximately 25% of the allotted time for Science 20.

Links to Mathematics: The following mathematics topics are related to the science content of Unit A but are not considered prerequisites.

Topics:	These topics may be found in the following courses:
• linear equations	Applied Mathematics 10, specific outcome 5.1
• measurement	Applied Mathematics 10, specific outcomes 1.2 and 1.3; Applied Mathematics 20, specific outcomes 6.2, 6.3 and 6.4

Focusing Questions: What is concentration? How has knowledge about oxidation-reduction in aqueous solutions been applied to solve practical problems? What characteristics of hydrocarbons are important to industry in Alberta?

General Outcomes: There are three major outcomes in this unit.

Students will:

1. investigate aqueous solutions to determine conductivity and to calculate concentration
2. explain oxidation, reduction and spontaneity and apply this knowledge to voltaic and electrolytic cells and to industrial processes
3. describe the properties of simple hydrocarbons and describe hydrocarbon-based industrial processes that are important in Alberta.

Key Concepts: The following concepts are developed in this unit and may also be addressed in other units or in other courses. The intended level and scope of treatment is defined by the outcomes.

- electrolytes
- nonelectrolytes
- concentration
- dilution
- oxidation/anode
- reduction/cathode
- spontaneity
- applications of oxidation-reduction reactions
- voltaic cell
- electrolytic cell
- naming and drawing structural formulas for saturated/unsaturated hydrocarbons (containing up to eight carbon atoms in the parent chain)
- hydrocarbon reactions important to industry in Alberta

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General Outcome 1
Students will investigate aqueous solutions to determine conductivity and to calculate concentration.

Specific Outcomes for Knowledge

Students will:

20–A1.1k explain how dissolving substances in water is often a prerequisite for chemical reactions and chemical changes; *e.g., batteries, baking, medications*

20–A1.2k differentiate, on the basis of properties, between electrolytes and nonelectrolytes

20–A1.3k compare and explain how concentrations of solutions are expressed in moles per litre, percent by volume and parts per million

20–A1.4k determine the concentration of solutions in moles per litre, percent by volume and parts per million

20–A1.5k determine the concentration of diluted solutions and the quantities of a concentrated solution and of water to use when diluting.

Specific Outcomes for Science, Technology and Society (STS) (Social and Environmental Contexts Emphasis)

Students will:

20–A1.1sts explain how science and technology are developed to meet societal needs and expand human capabilities **(SEC1) [ICT F2–4.8]**

- *identify properties of aqueous solutions that enable chemical reactions important for industry*

20–A1.2sts explain that science and technology have influenced, and been influenced by, historical development and societal needs **(SEC2) [ICT F2–4.8]**

- *compare the ways in which concentrations are expressed in chemistry laboratories, industrial processes, household products and environmental studies.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 1
Students will investigate aqueous solutions to determine conductivity and to calculate concentration.

Specific Outcomes for Skills (focus on applying science to inform decision-making processes)

Initiating and Planning

Students will:

20–A1.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- design a procedure to identify a solution as an electrolyte or a nonelectrolyte **(IP–NS2) [ICT F1–4.2]**.

Performing and Recording

Students will:

20–A1.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- use a conductivity apparatus to identify a solution as an electrolyte or a nonelectrolyte **(PR–NS2)**
- use a pipette and volumetric glassware to prepare a solution **(PR–NS2, PR–NS5)**.

Analyzing and Interpreting

Students will:

20–A1.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- use experimental data to determine the concentration of a solution **(AI–NS3) [ICT C6–4.1]**
- evaluate the risk involved in the handling, storage and disposal of solutions that are in common use in the laboratory, in the home and in industry across Alberta **(AI–SEC2, PR–NS5)**.

Communication and Teamwork

Students will:

20–A1.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- use appropriate International System of Units (SI) notation, fundamental and derived units and significant digits **(CT–ST2)**★
- *compare personal data on electrolytes and nonelectrolytes with the data of other students* **(CT–NS3)**
- *research, in teams, the impact of the release of effluents into waterways* **(IP–SEC3, PR–SEC1, AI–SEC3, CT–SEC1) [ICT C1–4.1]**.

★ To be developed throughout the course

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will explain oxidation, reduction and spontaneity and apply this knowledge to voltaic and electrolytic cells and to industrial processes.

Specific Outcomes for Knowledge

Students will:

20–A2.1k balance provided single-replacement reaction equations, building on knowledge from Science 10, Unit A

20–A2.2k determine the reactivity of metals by comparing their reaction in various aqueous solutions

20–A2.3k relate single-replacement reactions to oxidation-reduction and apply mole ratios from given equations to predict moles of metals consumed or produced

20–A2.4k define, operationally, oxidation and reduction and spontaneous and non-spontaneous reactions; i.e., loss of electrons is oxidation, gain of electrons is reduction, a spontaneous oxidation-reduction reaction produces electrical energy from chemical change, and a non-spontaneous oxidation-reduction reaction requires electrical energy to produce chemical change

20–A2.5k apply the principles of oxidation-reduction and half-reactions to describe, in general terms, the operation of voltaic and electrolytic cells; *e.g., batteries, metal extraction, cathodic protection, galvanizing, electroplating*
Note: Students are not expected to construct oxidation-reduction reaction equations; i.e., combining two half-reactions to produce a net equation.

20–A2.6k compare modern and traditional methods for the extraction of metals and for protection from corrosion; *e.g., development of glazes in traditional Aboriginal pottery manufacturing.*

Specific Outcomes for Science, Technology and Society (STS) (Science and Technology Emphasis)

Students will:

20–A2.1sts illustrate how science and technology have influenced, and been influenced by, historical development and societal needs **(SEC2) [ICT F2–4.8, F3–4.1]**
- *analyze the importance of voltaic, electrolytic and fuel cells and predict their future importance in society and industry*

20–A2.2sts describe applications of science and technology that have developed in response to human and environmental needs **(SEC1)**
- *investigate the use of technology to solve practical problems related to oxidation-reduction, considering cathodic protection, galvanizing, electroplating and extraction of metals*

20–A2.3sts illustrate how technological problems often require multiple solutions that involve different designs, materials and processes and that have both intended and unintended consequences **(ST3) [ICT C6–4.5, F3–4.1]**
- *describe the need for industrial processes to make use of efficient designs to provide optimal yields within constraints of cost and requirements for sustainability (production of smaller and longer-lasting batteries, for example, and considerations for their disposal)*
- *analyze technological products and processes related to batteries, metal extraction and anti-corrosion in terms of scientific principles and environmental stewardship.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will explain oxidation, reduction and spontaneity and apply this knowledge to voltaic and electrolytic cells and to industrial processes.

Specific Outcomes for Skills (focus on problem solving)

Initiating and Planning

Students will:

20–A2.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- describe procedures for safe handling, storage and disposal of materials used in the laboratory, with reference to WHMIS and consumer product labelling information **(IP–ST3, PR–NS5)**
- design a voltaic cell, with the aid of an activity series chart, to illustrate a spontaneous oxidation-reduction reaction **(IP–NS2, IP–NS3)**.

Performing and Recording

Students will:

20–A2.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- perform metals-in-aqueous-solutions experiments to observe the spontaneity of a series of oxidation-reduction reactions **(IP–ST3, PR–ST3) [ICT C6–4.1, C6–4.2]**
- create a chart or table that presents the results of oxidation-reduction experiments **(PR–NS4) [ICT C6–4.3]**
- construct a voltaic cell to illustrate a spontaneous oxidation-reduction reaction **(PR–ST2, PR–ST3)**.

Analyzing and Interpreting

Students will:

20–A2.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- determine the relative strengths of the oxidizing and reducing agents for a series of oxidation-reduction reactions **(AI–ST3) [ICT C6–4.1]**
- draw and label sketches of operating voltaic and electrolytic cells, identifying the anode, the cathode, oxidation, reduction and electron flow **(PR–NS4, CT–NS2)**.

Communication and Teamwork

Students will:

20–A2.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *analyze, constructively, the designs for operating voltaic and electrolytic cells developed by others* **(CT–NS3) [ICT C6–4.5]**
- *participate in a variety of electronic group formats to investigate an electrically powered device (battery-powered vehicles, watches or the effect of different batteries on the operation of listening devices, for example)* **(CT–SEC2) [ICT C3–4.1, C5–4.2]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 3
Students will describe the properties of simple hydrocarbons and describe hydrocarbon-based industrial processes that are important in Alberta.

Specific Outcomes for Knowledge

Students will:

20–A3.1k identify materials used in daily life that are based upon Alberta's petrochemical industry and that involve changes in energy; *e.g., plastics, cosmetics, gasoline*

20–A3.2k identify the physical characteristics of hydrocarbons, including trends with respect to melting and boiling points and solubility of alkanes, alkenes and alkynes

20–A3.3k provide International Union of Pure and Applied Chemistry (IUPAC) names and structural formulas for simple and noncyclic hydrocarbons in the homologous series of alkanes, alkenes and alkynes that contain up to eight carbon atoms in the parent chain

20–A3.4k identify hydrocarbons as a source of fossil fuels and explain the processes of fractional distillation to refine petroleum and catalytic cracking to produce ethene (ethylene)

20–A3.5k classify, balance and apply mole ratios to important hydrocarbon reactions:
- combustion of hydrocarbons to produce carbon dioxide, water vapour and energy
- production of ethene (ethylene) from catalytic cracking
- hydrogenation of alkenes (unsaturated) to produce alkanes (saturated)
- polymerization of ethene (ethylene) to polyethene (polyethylene).

Specific Outcomes for Science, Technology and Society (STS) (Science and Technology Emphasis)

Students will:

20–A3.1sts develop an understanding that science and technology are developed to meet societal needs and expand human capability **(SEC1) [ICT F2–4.8]**
- *describe some major reactions of the petrochemical industry in Alberta, such as the production of methanol and polyethene*
- *describe processes, such as catalytic cracking, for obtaining economically important compounds from fossil fuels*
- *explain the traditional uses of tar sands (pitch) as caulking for canoes and the use of animal oils and fats as fuels*

20–A3.2sts discuss the appropriateness, risks and benefits of technologies, assessing each potential application from a variety of perspectives, including sustainability **(ST7) [ICT F2–4.2, F3–4.1]**
- *identify challenges when taking scientific knowledge from the laboratory and applying the knowledge to large-scale manufacturing processes or to the development of products, considering such things as the supply of raw materials, energy, labour and the storage and disposal of waste products.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 3
Students will describe the properties of simple hydrocarbons and describe hydrocarbon-based industrial processes that are important in Alberta.

Specific Outcomes for Skills (focus on problem solving)

Initiating and Planning

Students will:

20–A3.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- describe procedures for safe handling, storage and disposal of materials used in the laboratory, with reference to WHMIS and consumer product labelling information **(IP–ST3, PR–NS5)**
- design a procedure to identify types of selected hydrocarbons **(IP–NS1, IP–NS2)**.

Performing and Recording

Students will:

20–A3.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- perform an experiment to compare reactivities of selected hydrocarbons **(PR–NS2, PR–NS3, PR–NS5) [ICT C6–4.1]**
- build molecular models, depicting the structures of selected hydrocarbons **(NS6a, PR–NS4)**.

Analyzing and Interpreting

Students will:

20–A3.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- *collect data on melting and boiling points of hydrocarbons and illustrate trends using charts, graphs or tables* **(PR–NS4, AI–NS2) [ICT C1–4.1, C6–4.3, C7–4.2]**.

Communication and Teamwork

Students will:

20–A3.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- follow appropriate IUPAC guidelines in writing the names and formulas of selected hydrocarbons **(CT–NS2)**
- *use teamwork to collect information and write a report that describes fractional distillation to refine petroleum and catalytic cracking to produce ethene* **(CT–NS1, CT–NS2) [ICT C1–4.1, C1–4.4]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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Unit B: Changes in Motion

Themes: Change, Energy and Systems

Overview: Motion is an important aspect of our lives, and the understanding of the effects of force on motion has many technological applications. Students learn that these applications can range from the design of safer roads and sports equipment to the investigation of traffic accidents. In this unit, students investigate the concepts of displacement, velocity, acceleration, force, momentum and mechanical energy and consider the relationships among them.

This unit builds on:

- Grade 8 Science, Unit D: Mechanical Systems
- Science 10, Unit B: Energy Flow in Technological Systems

This unit provides a background for:

- Science 30, Unit C: Electromagnetic Energy

Unit B will require approximately 25% of the allotted time for Science 20.

Links to Mathematics: The following mathematics topics are related to the science content of Unit B but are not considered prerequisites.

Topics:	These topics may be found in the following courses:
• properties of linear functions	Pure Mathematics 10, specific outcome 4.6; Applied Mathematics 10, specific outcomes 5.1, 5.2 and 5.7
• vector addition	Pure Mathematics 10, specific outcomes 6.1 and 6.2; Applied Mathematics 30, specific outcomes 5.1 to 5.4
• rewriting a formula in terms of the responding variable	Applied Mathematics 10, specific outcome 5.1
• plotting data and interpreting the resultant graph	Pure Mathematics 10, specific outcome 3.1; Applied Mathematics 10, specific outcome 3.1

Focusing Questions: How does the design of safety equipment and systems take into account concepts of changes in motion and forces? What has been the influence of society on the development of safety technology, and what are the contextual constraints and limits of these technological solutions?

General Outcomes: There are two major outcomes in this unit.

Students will:

1. describe one-dimensional motion of objects in terms of displacement, time, velocity and acceleration
2. describe and analyze the law of conservation of momentum for one-dimensional collisions and change in momentum (impulse) to explain how force affects motion.

Key Concepts: The following concepts are developed in this unit and may also be addressed in other units or in other courses. The intended level and scope of treatment is defined by the outcomes.

- displacement, time, velocity, acceleration
- conservation of momentum in one dimension
- impulse and force
- Newton's laws of motion
- application of laws of motion and principles of momentum in the design of sports equipment and transportation safety devices

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General Outcome 1
Students will describe one-dimensional motion of objects in terms of displacement, time, velocity and acceleration.

Specific Outcomes for Knowledge

Students will:

20–B1.1k distinguish between scalar and vector quantities, including distance and displacement, speed and velocity

20–B1.2k define velocity and acceleration as $\vec{v} = \Delta\vec{d} / \Delta t$ and $\vec{a} = \Delta\vec{v} / \Delta t$, respectively

20–B1.3k compare and contrast displacement in uniform motion and uniformly accelerated motion, using the following relationships: $\Delta\vec{d} = \vec{v}_i \Delta t + \frac{1}{2}\vec{a}\Delta t^2$ and $\Delta\vec{d} = \frac{\left(\vec{v}_i + \vec{v}_f\right)}{2}\Delta t$.

Note: Students are not expected to rearrange formulas if they require the quadratic equation.

Specific Outcomes for Science, Technology and Society (STS) (Science and Technology Emphasis)

Students will:

20–B1.1sts explain that the goal of technology is to provide solutions to practical problems **(ST1) [ICT F2–4.4]**

- *apply principles of one-dimensional uniform motion to relevant traffic safety design features, such as safe lengths of freeway entrance and exit ramps, traffic lights with advance warning flashers, types of intersections and length of time lights stay yellow*
- *analyze the design of stop-and-go zones and propose improvements to the design of traffic lights and intersections*

20–B1.2sts explain that science and technology have influenced, and been influenced by, historical development and societal needs **(SEC2) [ICT F2–4.8]**

- *describe the influence of societal perceptions of risk and the influence of scientific knowledge on the development of safety technologies designed to control changes in motion.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 1
Students will describe one-dimensional motion of objects in terms of displacement, time, velocity and acceleration.

Specific Outcomes for Skills (focus on problem solving)

Initiating and Planning

Students will:

20–B1.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- *determine what needs to be measured and select the proper procedures, tools and technologies for investigating the relationships among displacement, velocity and acceleration* **(IP–ST3) [ICT C6–4.4]**
- *design a study to assess the design of traffic lights and intersections* **(IP–ST1)**.

Performing and Recording

Students will:

20–B1.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- manipulate and present data, using appropriate tools, such as scientific instrumentation, calculators, databases or spreadsheets, for analyzing displacement, velocity and acceleration **(PR–NS4) [ICT P2–4.1]**
- use technologies effectively and accurately for collecting data on motion; *e.g., photogate, computer-based laboratories, stopwatches, weighing balances* **(PR–NS2) [ICT F1–4.2]**
- *use library and electronic research tools to collect information in determining risks associated with sporting activities and transportation-related activities* **(PR–SEC1) [ICT C1–4.1, C3–4.2]**.

Analyzing and Interpreting

Students will:

20–B1.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- analyze position-time and velocity-time graphs to infer the relationships among displacement, velocity and acceleration **(AI–NS2) [ICT C7–4.2]**
- solve, quantitatively, one-dimensional uniform motion and uniformly accelerated motion problems using $\Delta\vec{d} = \vec{v}_i\Delta t + \frac{1}{2}\vec{a}\Delta t^2$ and $\Delta\vec{d} = \frac{\left(\vec{v}_i + \vec{v}_f\right)}{2}\Delta t$ **(AI–NS3) [ICT C6–4.1]**.

Communication and Teamwork

Students will:

20–B1.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *use advanced menu features within a word processor to insert tables, graphs, text and graphics into a report* **(CT–ST2) [ICT P4–4.3]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will describe and analyze the law of conservation of momentum for one-dimensional collisions and change in momentum (impulse) to explain how force affects motion.

Specific Outcomes for Knowledge

Students will:

20–B2.1k define momentum as a vector quantity equal to the product of the mass and velocity of an object ($\vec{p} = m\vec{v}$)

20–B2.2k apply the law of conservation of momentum to one-dimensional collisions and explosions

20–B2.3k define change in momentum as impulse $\left(\Delta\vec{p} = m\Delta\vec{v} = \vec{F}_{ave}\Delta t\right)$, relate impulse to acceleration and Newton's second law of motion $\left(\Delta\vec{p}/\Delta t = m\vec{a} = \vec{F}\right)$, and apply the concept of impulse to explain the functioning of a variety of safety devices; *e.g., air bags, collapsible frames, bumpers, seat belts in cars, restraining nets and crash barriers on highways, collapsible steering wheels, padded dashboards, padded helmets, padded goggles and padded gloves, all of which are designed to increase the stopping time or time of contact by reducing acceleration and, thereby, force*

20–B2.4k explain how an unbalanced force causes change in motion and apply Newton's first law of motion to explain an object's state of rest or uniform motion; *e.g., movement of passengers in a moving car that accelerates or is coming to a stop*

20–B2.5k apply Newton's second law of motion and use it to relate force, mass and motion; *e.g., as an explanation of a whiplash injury from a rear-end collision*

20–B2.6k apply Newton's third law of motion to explain the interaction between two objects; *e.g., collision between two cars*

20–B2.7k relate, quantitatively, potential and kinetic energy to work done.

Specific Outcomes for Science, Technology and Society (STS) (Science and Technology Emphasis)

Students will:

20–B2.1sts explain that the goal of technology is to provide solutions to practical problems **(ST1) [ICT F2–4.4]**

- *explain the need for safety technologies and regulations for transportation and sporting situations*
- *trace the development of safety technologies in sports or transportation over the past 50 years, and compare the functioning of first- and current-generation safety technologies, such as sports safety equipment (helmets, shin guards, gloves) and automobile safety devices (lap belts, shoulder belts, air bags)*

20–B2.2sts explain that decisions regarding the application of scientific and technological development involve a variety of perspectives, including social, cultural, environmental, ethical and economic considerations **(SEC4b) [ICT F2–4.2, F2–4.8, F3–4.1]**

- *analyze automobile and sports equipment safety features with a view to reducing risks within contextual constraints, such as costs, materials, weight, requirements for sustainability, rules and regulations*

20–B2.3sts explain that the appropriateness, risks and benefits of technologies need to be assessed for each potential application from a variety of perspectives, including sustainability **(ST7) [ICT F3–4.1]**

- *list and assess the risks in a variety of day-to-day transportation and sporting situations, and describe the technologies designed to reduce the risk of injury.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will describe and analyze the law of conservation of momentum for one-dimensional collisions and change in momentum (impulse) to explain how force affects motion.

Specific Outcomes for Skills (focus on problem solving)

Initiating and Planning

Students will:

20–B2.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- identify questions to investigate that arise from practical problems and issues; *e.g., "How can sports equipment be made to increase its protective capacity?", "Do you increase protection or change the rules to make sports such as soccer or hockey safer?"* **(IP–ST1)**
- *use spreadsheets to analyze the law of conservation of momentum* **(IP–ST3) [ICT C6–4.2, P2–4.1]**.

Performing and Recording

Students will:

20–B2.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- compile and organize data on the risk of injury and death related to seat belt and air bag use **(PR–NS4) [ICT C6–4.2, P2–4.1]**
- *test materials for use as seat belts or as padding for sports equipment* **(PR–ST2)**.

Analyzing and Interpreting

Students will:

20–B2.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- solve one-dimensional collision and explosion problems, using scale diagrams and numerical calculations; *e.g., apply* $m_1\vec{v}_1 + m_2\vec{v}_2 = m_1\vec{v}_1' + m_2\vec{v}_2'$ *to traffic accidents involving two vehicles* **(AI–ST3) [ICT C6–4.1, P2–4.1]**
- *delineate cause and effect or correlation among the use of seat belts or air bags, seat belt legislation and reduction of fatalities* **(AI–NS6) [ICT C7–4.2]**
- *suggest a variety of alternatives to reduce whiplash injury caused by rear-end collisions and evaluate each alternative* **(AI–ST2) [ICT C2–4.1]**
- *develop criteria and use them to assess a device for reducing whiplash injury* **(AI–ST1)**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will describe and analyze the law of conservation of momentum for one-dimensional collisions and change in momentum (impulse) to explain how force affects motion.

Communication and Teamwork

Students will:

20–B2.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *consult a wide variety of sources that reflect varied viewpoints on particular topics, such as legislation of seat belt use* **(CT–SEC4) [ICT C2–4.1]**
- *work cooperatively with team members, using library and electronic research tools to collect information in determining risks associated with sports- and transportation-related activities* **(PR–SEC2, CT–NS1) [ICT C1–4.1]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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Unit C: The Changing Earth

Themes: Change, Diversity, Energy and Systems

Overview: The history of our planet is one of change. There is evidence not only that Earth's surface is changing but that this change has, in turn, dramatically impacted the climate and life forms on Earth over time. In this unit, students examine scientific evidence for natural causes of climate change, for changing life forms and for continual changes to the Earth's surface.

This unit builds on:
- Grade 7 Science, Unit E: Planet Earth
- Science 10, Unit D: Energy Flow in Global Systems

This unit provides a background for:
- Science 30, Unit D: Energy and the Environment

Unit C will require approximately 25% of the allotted time for Science 20.

Links to Mathematics: The following mathematics topics are related to the science content of Unit C but are not considered prerequisites.

Topics:	These topics may be found in the following courses:
• plotting data and interpreting the resultant graph	Pure Mathematics 10, specific outcome 3.1; Applied Mathematics 10, specific outcome 3.1
• measurement	Applied Mathematics 20, specific outcomes 6.2, 6.3 and 6.4

Focusing Questions: What is the scientific evidence of change to Earth? How has this evidence been used to formulate scientific theories? What are the limitations of current theories in making predictions about future changes to Earth?

General Outcomes: There are four major outcomes in this unit.

Students will:

1. analyze the scientific evidence and explanations for geologic phenomena that occurred long ago or are taking place over a long period of time
2. analyze and assess the evidence to explain the theory of plate tectonics and the internal structure of Earth
3. analyze and assess the evidence provided by the fossil record of change in the environment and life forms over a period of 3.5 billion years
4. analyze the evidence of, and assess the explanations for, natural variations in Earth's climate over the last two million years.

Key Concepts: The following concepts are developed in this unit and may also be addressed in other units or in other courses. The intended level and scope of treatment is defined by the outcomes.

- Earth's internal structure
- theory of plate tectonics
- energy transmission in earthquakes
- fossilization, radiometric dating and half-life
- major characteristics and life forms of past eras
- gradualism compared to punctuated equilibrium
- mass extinctions
- evidence of variations in Earth's climate

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General Outcome 1
Students will analyze the scientific evidence and explanations for geologic phenomena that occurred long ago or are taking place over a long period of time.

Specific Outcomes for Knowledge

Students will:

20–C1.1k describe the challenges in investigating the changes that take place over hundreds of millions of years to Earth's crustal plates, to past climates and to life forms

20–C1.2k describe, in general terms, how the theories of geologic processes have changed over time.

Specific Outcomes for Science, Technology and Society (STS) (Nature of Science Emphasis)

Students will:

20–C1.1sts explain that scientific knowledge is subject to change as new evidence becomes apparent and as laws and theories are tested and subsequently revised, reinforced, rejected or replaced **(NS4)**

- *refer to the contributions of Hutton, Lyell and Wegener to the development of theories of geologic processes*

20–C1.2sts explain that scientific knowledge may lead to the development of new technologies and that new technologies may lead to or facilitate scientific discovery **(ST4) [ICT F2–4.4, F2–4.8]**

- *explain the importance of technology in facilitating the study of changes to Earth's surface, climate and life forms (enhancing the gathering of data and the quality, accuracy and precision of data), considering such things as seismometers, radiometric dating technologies, sonar mapping of the ocean floor and the global positioning system (GPS) to measure plate movement.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 1
Students will analyze the scientific evidence and explanations for geologic phenomena that occurred long ago or are taking place over a long period of time.

Specific Outcomes for Skills (focus on scientific inquiry)

Initiating and Planning

Students will:

20–C1.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- state a prediction and a hypothesis based on available evidence and background information or theory; *e.g., use available data to predict the position of land masses 1000 years from now* **(IP–NS3) [ICT C7–4.2]**.

Performing and Recording

Students will:

20–C1.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- *create a chart that shows the relationships among geological era, position of the continental plates and climate* **(PR–NS4) [ICT C6–4.3, C7–4.2]**.

Analyzing and Interpreting

Students will:

20–C1.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- *assess the authority, reliability and validity of electronically accessed information about changes to Earth* **(AI–NS4) [ICT C3–4.1]**.

Communication and Teamwork

Students will:

20–C1.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *select and use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate about the geology of Earth* **(CT–NS2)**
- *synthesize information about the changing Earth from multiple sources, or from complex and lengthy texts; record relevant data for acknowledging sources of information; and cite sources correctly* **(CT–NS2) [ICT F3–4.2, F3–4.3]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will analyze and assess the evidence to explain the theory of plate tectonics and the internal structure of Earth.

Specific Outcomes for Knowledge

Students will:

20–C2.1k describe how energy from earthquakes is transmitted by seismic waves

20–C2.2k describe the relationship between the Richter scale and an earthquake's ground motion and energy

20–C2.3k identify primary and secondary seismic waves (P- and S-waves, respectively) and longitudinal and transverse surface waves on the basis of vibration and direction of propagation and potential for destruction

20–C2.4k explain how seismic waves are used to better understand the internal structure of Earth

20–C2.5k identify and describe the layers of Earth (i.e., lithosphere, asthenosphere, mesosphere, outer core and inner core) as classified by the physical properties of density, rigidity and thickness

20–C2.6k list and describe the evidence that supports the theory of plate tectonics; i.e., location of volcanoes and earthquakes, ocean floor spreading, mountain ranges, age of sediments, paleomagnetism

20–C2.7k explain how convection of molten material provides the driving force of plate tectonics, and explain the tentativeness of the explanation that radioactive decay is the source of geothermal energy for plate tectonics.

Specific Outcomes for Science, Technology and Society (STS) (Nature of Science Emphasis)

Students will:

20–C2.1sts explain that concepts, models and theories are often used in interpreting and explaining observations and in predicting future observations **(NS6a)**

- *assess the theory of plate tectonics in terms of its ability to explain and predict changes to Earth's surface*

20–C2.2sts explain that science and technology are developed to meet societal needs and expand human capability **(SEC1) [ICT F2–4.4, F2–4.8]**

- *describe the limitations of current knowledge in predicting earthquakes and the need for more accurate predictions.*

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General Outcome 2
Students will analyze and assess the evidence to explain the theory of plate tectonics and the internal structure of Earth.

Specific Outcomes for Skills (focus on scientific inquiry)

Initiating and Planning

Students will:

20–C2.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- define and delimit problems, *e.g., how to locate the approximate epicentre of an earthquake,* using data provided to facilitate investigation **(IP–NS1)**
- *design an experiment to test the effect of a simulated earthquake on a model building* **(IP–NS2)**
- *investigate Canada's earthquake-prone areas and predict likely locations of a future earthquake* **(IP–NS3) [ICT C7–4.2]**.

Performing and Recording

Students will:

20–C2.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- *compile and organize data to investigate monthly occurrences of earthquakes, their intensity and their locations around the world* **(PR–NS4) [ICT C7–4.2, P2–4.1]**.

Analyzing and Interpreting

Students will:

20–C2.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- *estimate, predict, check and validate calculations when determining the location of earthquakes* **(AI–NS3) [ICT C6–4.1, F1–4.2]**
- *compare the theories of continental drift and plate tectonics* **(AI–SEC1) [ICT C2–4.2]**
- *investigate the application of seismic and surface waves in the design of earthquake-resistant buildings* **(AI–ST4)**.

Communication and Teamwork

Students will:

20–C2.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *use advanced menu features within a word processor to insert tables, graphs, text and graphics and select and use multimedia capabilities for presentation* **(CT–NS2) [ICT P3–4.1, P4–4.3]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 3
Students will analyze and assess the evidence provided by the fossil record of change in the environment and life forms over a period of 3.5 billion years.

Specific Outcomes for Knowledge

Students will:

20–C3.1k explain how knowledge of radioisotopes, radioactive decay and half-lives are used to estimate the age of minerals and fossils

20–C3.2k describe common types of fossilization, i.e., actual remains, molds or imprints, tracks, trails or burrows, as direct evidence of evolution and describe the significance of the fossil record in Canada's Burgess Shale

20–C3.3k explain how sedimentary rock layers along with fossils can provide evidence of chronology, paleoclimate, evolution and mass extinctions; *e.g., index and transitional fossils, fossils of reptiles and certain types of plants usually indicate a warm, tropical climate*

20–C3.4k describe, in general terms, the major characteristics and life forms of the four eras: Precambrian, Paleozoic, Mesozoic and Cenozoic

20–C3.5k explain why oxygen became a significant component of Earth's atmosphere after the evolution of plants and chlorophyll.

Specific Outcomes for Science, Technology and Society (STS) (Nature of Science Emphasis)

Students will:

20–C3.1sts explain that scientific knowledge may lead to the development of new technologies and that new technologies may lead to or facilitate scientific discovery **(ST4) [ICT F2–4.4, F2–4.8]**

- *explain the importance of technology in facilitating the study of changes to Earth's climate and life forms (enhancing the gathering of data and the quality, accuracy and precision of data), considering such things as radiometric dating technologies, sonar mapping of the ocean floor and the global positioning system (GPS) to measure plate movement*

20–C3.2sts explain that scientific knowledge is subject to change as new evidence becomes apparent and as laws and theories are tested and subsequently revised, reinforced, rejected or replaced **(NS4) [ICT C7–4.2]**

- *discuss probable causes of, and geologic evidence for, mass extinctions and contrast these causes with the forces driving the current decline in species.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 3
Students will analyze and assess the evidence provided by the fossil record of change in the environment and life forms over a period of 3.5 billion years.

Specific Outcomes for Skills (focus on scientific inquiry)

Initiating and Planning

Students will:

20–C3.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- use stratigraphic evidence of one location to predict geologic structures in a neighbouring region **(IP–NS3) [ICT C6–4.1, C7–4.2]**.

Performing and Recording

Students will:

20–C3.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- *compile and organize data, using appropriate formats and data treatments to facilitate interpretation, when determining climatic conditions based on fossil evidence* **(PR–NS4) [ICT C6–4.2, P2–4.1]**.

Analyzing and Interpreting

Students will:

20–C3.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- interpret simple stratigraphic sequences **(AI–NS2) [ICT C7–4.2]**
- apply units of geological time; i.e., eras, periods and epochs **(AI–NS1)**
- interpret decay curves of elements commonly used for radioactive dating **(AI–NS2) [ICT C7–4.2]**
- *describe earlier life forms on the basis of fossil evidence, identify and explain sources of error, and express results in a form that acknowledges the degree of uncertainty* **(AI–NS4)**.

Communication and Teamwork

Students will:

20–C3.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *prepare a group presentation, summarizing the arguments for gradualism and punctuated equilibrium as two possible patterns of evolution* **(CT–NS1) [ICT P6–4.1]**
- *evaluate individual and group processes used in planning and carrying out an investigation, based on fossil evidence, into changes in life forms* **(CT–NS3)**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 4
Students will analyze the evidence of, and assess the explanations for, natural variations in Earth's climate over the last two million years.

Specific Outcomes for Knowledge

Students will:

20–C4.1k describe the geologic evidence for repeated glaciation over large areas of Canada and in their local area; *e.g., the Cypress Hills, gold deposits in the Yukon, topography, drainage patterns, erratics, U-shaped valleys*

20–C4.2k explain how ice cores from polar icecaps provide evidence of warming and cooling in the past hundred thousand years

20–C4.3k explain, in general terms, how changes to Earth's climate and how mass extinctions could be caused by changes or variation in the following: Earth's orbit around the sun, the inclination of Earth's axis, solar energy output, Earth's geography due to crustal movement, volcanic activity, ocean currents, atmospheric composition or asteroid impact.

Specific Outcomes for Science, Technology and Society (STS) (Nature of Science Emphasis)

Students will:

20–C4.1sts explain that concepts, models and theories are often used in interpreting and explaining observations and in predicting future observations **(NS6a)**

- *describe the limitations of current geological models in predicting future changes to climate.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 4
Students will analyze the evidence of, and assess the explanations for, natural variations in Earth's climate over the last two million years.

Specific Outcomes for Skills (focus on scientific inquiry)

Initiating and Planning

Students will:

20–C4.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- design a plan for surveying data on ice core samples from ice fields around the world for a study of climate over the last two million years **(IP–NS1, IP–NS4)**.

Performing and Recording

Students will:

20–C4.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- select relevant ice-core data for a study of climate over the last two million years **(PR–NS4)**
- *view a glacier in aerial photographs and document the changes that have occurred over time* **(PR–NS4) [ICT C7–4.2]**.

Analyzing and Interpreting

Students will:

20–C4.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- identify and explain sources of error and uncertainty in measurement when describing past climates based on ice-core data and express results in a form that acknowledges the degree of uncertainty **(AI–NS4)**
- *distinguish between correlation and cause and effect when describing the relationship between climate change and mass extinction* **(AI–NS6) [ICT C7–4.2]**
- *identify new questions or problems that arise from what was learned, such as: "Is the current rate of species extinction the same as in periods of mass extinction in the past?"* **(AI–NS5)**.

Communication and Teamwork

Students will:

20–C4.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *synthesize information from multiple sources when making inferences about global warming and climate change, recording relevant data, acknowledging sources of information and citing sources correctly* **(CT–SEC2) [ICT C7–4.2, F3–4.2, F3–4.3]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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Unit D: Changes in Living Systems

Themes: Energy, Equilibrium, Change and Systems

Overview: Matter cycles and energy dissipates through the biosphere and its component ecosystems. The concept of an ecosystem is used to explain energy flow and nutrient recycling and to quantify large-scale and long-term processes. Students will study habitat destruction, ecological succession and changes to populations, focusing on the need to balance the interests of a growing human population with sustainable ecosystems.

This unit builds on:

- Grade 9 Science, Unit A: Biological Diversity
- Science 10, Unit D: Energy Flow in Global Systems

This unit provides a background for:

- Science 30, Unit A: Living Systems Respond to Their Environment

Unit D will require approximately 25% of the allotted time for Science 20.

Links to Mathematics: None

Focusing Questions: What are the characteristics of an ecosystem? How does matter cycle and energy flow through the biosphere and through ecosystems, and what are the implications of this knowledge in terms of protecting the environment for future generations? How do ecosystems and organisms change over time and respond to natural and human interventions?

General Outcomes: There are three major outcomes in this unit.

Students will:

1. analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components
2. analyze and investigate the cycling of matter and the flow of energy through the biosphere and ecosystems as well as the interrelationship of society and the environment
3. analyze and describe the adaptation of organisms to their environments, factors limiting natural populations, and evolutionary change in an ecological context.

Key Concepts: The following concepts are developed in this unit and may also be addressed in other units or in other courses. The intended level and scope of treatment is defined by the outcomes.

- biotic and abiotic factors
- population size
- primary and secondary succession
- habitat destruction, reclamation
- species diversity
- human interventions in biogeochemical (nitrogen, carbon, water) cycles
- autotrophs, heterotrophs, food chains, food webs
- trophic levels, biomass, energy and pyramids
- human population growth, biodiversity and carrying capacity
- adaptation of organisms, natural selection
- evidence for the theory of evolution

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General Outcome 1
Students will analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components.

Specific Outcomes for Knowledge

Students will:

20–D1.1k investigate and analyze an aquatic or a terrestrial local ecosystem, distinguish between biotic and abiotic factors, describe how these factors affect population size and
- infer the abiotic effects on life; *e.g., light, nutrients, water, temperature*
- infer biotic interactions; *e.g., predator-prey relationships, competition, symbiotic relationships*
- infer the influence of biota on the local environment; *e.g., microclimates, soil, nutrients*

20–D1.2k describe the key stages of primary succession in a specific ecosystem and the nature of its climax community; *e.g., spruce bog, sand dune, pond, prairie*

20–D1.3k differentiate between primary and secondary succession in a specific aquatic and a specific terrestrial ecosystem, *e.g., pond, river, lake, forest, parkland*, and compare natural and artificial means to initiate secondary succession in an ecosystem, *e.g., reforestation or regrowth after a forest fire, flood or other natural disaster, strip mining, clearcutting, controlled burns by some Aboriginal groups promoting forest biome regeneration*

20–D1.4k describe the potential impact of habitat destruction on an ecosystem

20–D1.5k describe the effects of introducing a new species into, or largely removing an established species from, an environment; *e.g., zebra mussel, carp and the Eurasian milfoil in Canada's lakes, purple loosestrife in Alberta, the horse or the buffalo in the plains region of Alberta.*

Specific Outcomes for Science, Technology and Society (STS) (Social and Environmental Contexts Emphasis)

Students will:

20–D1.1sts describe how society provides direction for scientific and technological development **(SEC4) [ICT F2–4.4]**
- *discuss public support of scientific work on predator-prey relationships as part of wildlife management in national and provincial parks (introduction of wolves, for example)*

20–D1.2sts explain that society and technology have both intended and unintended consequences for humans and the environment **(SEC3) [ICT F2–4.8, F3–4.1]**
- *discuss, in terms of scientific principles, how reforestation projects change the direction of secondary succession in a natural ecosystem*
- *assess the long-term implications of fire control and prevention on population and ecosystem stability, diversity and productivity*
- *assess habitat loss and the responsibility of society to protect the environment for future generations*
- *analyze the need for habitat reclamation, such as recreating wetlands and swamps, forests, and prairie grasslands, and describe steps to ensure species diversity.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 1
Students will analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components.

Specific Outcomes for Skills (focus on applying science to inform decision-making processes)

Initiating and Planning

Students will:

20–D1.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- *design a model to explain the relationship between populations of predator and prey, outlining the characteristics of each that adapt them to their trophic level* **(IP–NS2)**
- *inquire into the effect of logging on predation levels of deer as well as on food sources for deer* **(IP–NS1)**
- *design an experiment and identify specific variables to investigate relationships between biotic and abiotic elements of a micro-ecosystem* **(IP–NS2)**
- *evaluate and select appropriate procedures and technology to measure the impact of introducing species X into a specific environment* **(IP–NS4) [ICT C6–4.5]**.

Performing and Recording

Students will:

20–D1.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- perform a field study; measure, qualitatively and quantitatively, appropriate biotic and abiotic factors in the aquatic or terrestrial ecosystem chosen; and present data in a form that describes, in general terms, the structure of the ecosystem; *e.g., pH, temperature, precipitation, water hardness, turbidity, dissolved oxygen content, humidity, wind, light intensity, soil composition, plants, animals, micro-organisms* **(PR–NS4) [ICT C6–4.2]**
- *use library and electronic research tools to collect information on a given topic, such as:*
  - *protection of the environment as a priority over economic interest*
  - *endangered species of the world*
  - *the Convention on Biological Diversity*
  - *sustainable development initiatives* **(PR–NS4) [ICT C1–4.1, C3–4.2]**.

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 1
Students will analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components.

Analyzing and Interpreting

Students will:

20–D1.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- analyze field study data to identify the interrelationships of biotic and abiotic components of the ecosystem studied; *e.g., dominant plants, micro-climates and habitats, niches and interrelationships of biota* **(AI–NS1, AI–NS2) [ICT C7–4.2]**
- *tabulate, graph and interpret relevant data collected from observations of succession in a micro-climate (hay infusion, for example)* **(AI–NS2) [ICT C6–4.3]**
- *analyze statistical data in diagrams, tables and graphs as part of a briefing for a public hearing on a proposed mineral exploration in an ecologically or a culturally sensitive area* **(AI–NS2, AI–NS3, AI–NS4) [ICT C7–4.2]**
- *analyze the information presented by opposing sides on an environmental issue, such as that of an environmental group and that of an industry representative, to determine bias* **(AI–NS4, AI–SEC1) [ICT C2–4.1, C2–4.2]**
- *identify new questions that arise from investigations, such as: "Should naturally occurring forest fires be fought?"* **(AI–NS5)**.

Communication and Teamwork

Students will:

20–D1.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *elicit feedback from others on an environmental issue* **(CT–NS1)**
- *participate in a variety of electronic group formats to gather and share information about environmental issues* **(CT–NS1) [ICT C5–4.2]**
- *prepare a visual display that explains initiatives undertaken by industry to protect the environment* **(CT–NS2) [ICT P4–4.2]**.

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General Outcome 2
Students will analyze and investigate the cycling of matter and the flow of energy through the biosphere and ecosystems as well as the interrelationship of society and the environment.

Specific Outcomes for Knowledge

Students will:

20–D2.1k outline the biogeochemical cycles of nitrogen, carbon, oxygen and water and, in general terms, describe their interconnectedness, building on knowledge of the hydrologic cycle from Science 10, Unit D

20–D2.2k describe artificial and natural factors that affect the biogeochemical cycles:

- nitrogen cycle; *e.g., automobile, agricultural and industrial contributions to NO_x combining with water to produce nitric acid, nitrogen in manure and fertilizers*
- carbon cycle; *e.g., emissions of carbon oxides from extraction, distribution and combustion of fossil fuels, releases associated with deforestation and cement industries*
- water cycle; *e.g., extraction of ground water, dams for hydro-electricity and irrigation*

20–D2.3k analyze and describe how energy flows in an ecosystem, using the concepts of conservation of energy (second law of thermodynamics); energy input and output through trophic levels, food webs, chains and pyramids; and specific examples of autotrophs and heterotrophs

20–D2.4k explain why population size and biomass are both directly related to the trophic level of the species and explain how trophic levels can be described in terms of pyramids of numbers, biomass or energy.

Specific Outcomes for Science, Technology and Society (STS) (Social and Environmental Contexts Emphasis)

Students will:

20–D2.1sts explain that science and technology have both intended and unintended consequences for humans and the environment **(SEC3) [ICT F2–4.8, F3–4.1]**

- *assess whether the efforts to reduce human impact on biogeochemical cycles are viable, taking into consideration a variety of perspectives (considerations for deep-well and deep-ocean injection of wastes, for example, include properties of waste, concentration, uncertainty, environmental concerns, risks and benefits to human health and organisms, costs)*
- *evaluate the influence of society, and the impact of a variety of technologies, on the nitrogen cycle*
- *discuss the use of water by society, the impact such use has on water quality and quantity in ecosystems, and the need for water purification and conservation, considering such things as manufacturing, the oil industry, agricultural systems, the mining industry and domestic daily water consumption*

20–D2.2sts explain that science and technology are developed to meet societal needs and expand human capabilities **(SEC1) [ICT F2–4.8]**

- *contrast the diet of people in developing countries and that of people in developed countries in terms of energy efficiency and environmental impact, and describe ways to address potential food shortages in the future.*

Note: Some of the outcomes are supported by examples. The examples are written in italics and **do not form part of the required program** but are provided as an illustration of how the outcomes might be developed.

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General Outcome 2
Students will analyze and investigate the cycling of matter and the flow of energy through the biosphere and ecosystems as well as the interrelationship of society and the environment.

Specific Outcomes for Skills (focus on applying science to inform decision-making processes)

Initiating and Planning

Students will:

20–D2.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- *design an investigation to compare the carbon dioxide production of plants with that of animals* **(IP–NS1, IP–NS2, IP–NS3, IP–NS4)**
- *hypothesize how alternations in the carbon cycle as a result of the burning of fossil fuels might affect other biogeochemical cycles (sulfur, iron and water, for example)* **(IP–NS3)**
- *predict disruptions in the nitrogen cycle that are caused by human activities* **(IP–NS3)**.

Performing and Recording

Students will:

20–D2.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- draw, by hand or using technology, annotated diagrams of energy flow in food chains, webs and pyramids **(PR–NS4)**.

Analyzing and Interpreting

Students will:

20–D2.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- describe alternative ways of presenting energy-flow data for ecosystems: pyramid of biomass, of numbers or of energy **(AI–NS4, AI–NS5, AI–NS6)**
- *evaluate the relevance, reliability and adequacy of data and data-collection methods, including assessing the authority, reliability and validity of electronically accessed information* **(AI–NS4) [ICT C3–4.1, C3–4.2]**
- *evaluate the appropriateness of a technology, such as deep-well injection of wastes, to solve a problem* **(AI–SEC2) [ICT C6–4.5]**.

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General Outcome 2
Students will analyze and investigate the cycling of matter and the flow of energy through the biosphere and ecosystems as well as the interrelationship of society and the environment.

Communication and Teamwork

Students will:

20–D2.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *use advanced menu features within a word processor to insert tables, graphs, text and graphics in food webs and energy budgets for various trophic levels in an ecosystem* **(CT–NS2) [ICT P4–4.3]**
- *make arguments on an issue such as the expansion of housing and other amenities in Banff National Park or Jasper National Park* **(CT–SEC3) [ICT C2–4.1, C7–4.2]**
- *work cooperatively in a group to investigate the influence of human activities on the biogeochemical cycles and, using appropriate multimedia, present the findings* **(CT–SEC1, CT–SEC2) [ICT P3–4.1]**.

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General Outcome 3
Students will analyze and describe the adaptation of organisms to their environments, factors limiting natural populations, and evolutionary change in an ecological context.

Specific Outcomes for Knowledge

Students will:

20–D3.1k describe mutation as the principal cause for variation of genes in species and populations, identify the role of sexual reproduction in generating variability among individuals and describe the forces that drive evolution

20–D3.2k describe the adaptation of species over time due to variation in a population, population size and environmental change; *e.g., bacterial resistance to antibiotics, giraffe neck length, gazelle speed*

20–D3.3k describe evidence for evolution by natural selection; *e.g., fossils, biogeography, embryology, homologous and vestigial structures, biochemical research*

20–D3.4k compare gradual evolution with punctuated equilibrium

20–D3.5k describe how factors including space, accumulation of wastes (*e.g., salinization of soil*), competition, technological innovations, irrigation practices (*e.g., Hohokam farmers*) and the availability of food impact the size of populations

20–D3.6k compare the growth pattern of the human population to that of other species.

Specific Outcomes for Science, Technology and Society (STS) (Nature of Science Emphasis)

Students will:

20–D3.1sts explain that scientific knowledge and theories develop through hypotheses, the collection of evidence through investigation and the ability to provide explanations **(NS2)**

- *discuss the nature of science as a way of knowing, considering the contributions of Buffon, Lyell, Malthus and Wallace to the theory of evolution*
- *describe how paleontology has provided invaluable data in the attempt to explain observable variations in organisms (horse, fish) over time*
- *compare Lamarckian and Darwinian explanations of evolutionary change.*

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General Outcome 3
Students will analyze and describe the adaptation of organisms to their environments, factors limiting natural populations, and evolutionary change in an ecological context.

Specific Outcomes for Skills (focus on scientific inquiry)

Initiating and Planning

Students will:

20–D3.1s ask questions about observed relationships and plan investigations of questions, ideas, problems and issues

- *design an investigation to measure or describe an inherited variation in a plant or an animal population* **(IP–NS1, IP–NS2, IP–NS3, IP–NS4)**.

Performing and Recording

Students will:

20–D3.2s conduct investigations into relationships among observable variables and use a broad range of tools and techniques to gather and record data and information

- gather data, actual or simulated, on organisms to demonstrate how inherited characteristics change over time; *e.g., Darwin's finches, bacteria, domestic plants and animals* **(PR–NS1, PR–NS4)**.

Analyzing and Interpreting

Students will:

20–D3.3s analyze data and apply mathematical and conceptual models to develop and assess possible solutions

- analyze data, actual or simulated, on organisms to demonstrate how inherited characteristics change over time; *e.g., Darwin's finches, bacteria, domestic plants and animals* **(AI–NS2) [ICT C7–4.2]**
- demonstrate and assess the effect of environmental factors on population growth curves **(AI–NS2, AI–NS6) [ICT C7–4.2]**
- *use calculated or actual data to graph the growth of populations that demonstrate exponential growth and logistic growth* **(AI–NS2) [ICT C6–4.2, C6–4.3]**
- *apply the growth curve for open populations to identify the long-term impact on Earth's carrying capacity and the demands on natural resources for a growing human population* **(AI–NS2, AI–NS4, AI–NS6)**
- *analyze the processes governing the growth pattern of human populations that are different from those governing naturally occurring populations* **(AI–NS2) [ICT C7–4.2]**.

Communication and Teamwork

Students will:

20–D3.4s work as members of a team in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results

- *discuss Darwin's impact on modern science and society* **(CT–NS1)**.

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